RAILWAY AGE

THE STANDARD RAILROAD WEEKLY FOR ALMOST A CENTURY

A.R.E.A. CONVENTION NUMBER

MARCH 19, 1951

5 Copy

4213

Prince, West Virginia Station on the C & O . . . radiant heating.

New Hyde Park, New York, station on the Long Island . . . radiant heating.

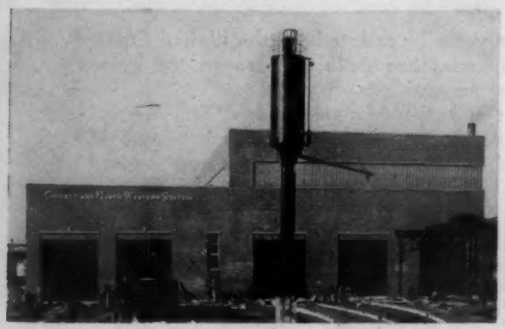
Kings Park, New York, station on the Long Island . . . radiant heating.

MORE AND MORE RAILROADS are using

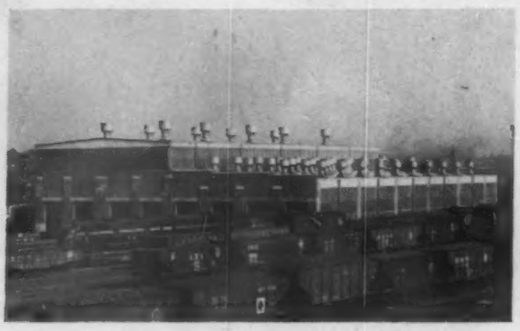
RADIANT HEATING AND SNOW MELTING

with

BYERS' WROUGHT IRON PIPE



Chicago and Northwestern Diesel shop, Chicago, Illinois . . . radiant heating, and snow melting installation along access tracks.



Radiant Heating, Diesel Shop, Pennsylvania Railroad, Harrisburg, Pa.

It takes a durable material to measure up to railroad standards —but that is only one of the advantages of wrought iron for radiant heating and snow melting. It is readily bent and welded . . . has high heat emission . . . expands at almost identical rates with concrete . . . and has adequate mechanical strength to resist damage during installation. For full details on system calculation and layout, ask for our bulletin, WROUGHT IRON FOR RADIANT HEATING.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.

BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

Nalco "N" STEAM CONDITIONER

The Superior Anti-Foam

NALCO "N" CHARACTERISTICS

- Furnished in convenient ball or powder form.
- Applied either direct to tender tanks or through standard proportioning equipment.
- Cuts blowdown required to only that necessary for sludge removal.
- Effective in boilers many times longer than previous antifoam materials.
- Stops foaming without need for frequent water changes and boiler washings.
- Conforms to latest recommendations for boiler metal protection.

EXTENSIVE use for three years by railroads of the United States and of certain other countries has definitely proven the great effectiveness of Nalco "N" as an anti-foam material.

The first big improvement in anti-foams was Nalco "D", a polyamide type of material. It did great work and Nalco is proud of this contribution to improved locomotive operation, but now it gives way to the most important development of all in anti-foams — Nalco "N".

Nalco "N" is so effective that locomotives now using it are operating with no definite dissolved solids limits—and no foaming.

Blowdown reduction—often as high as 75%—results in sizable fuel savings. Reductions in terminal handling time and locomotive maintenance have reduced expenses and increased availability, thus adding to the total savings realized from the use of this modern type of anti-foam.

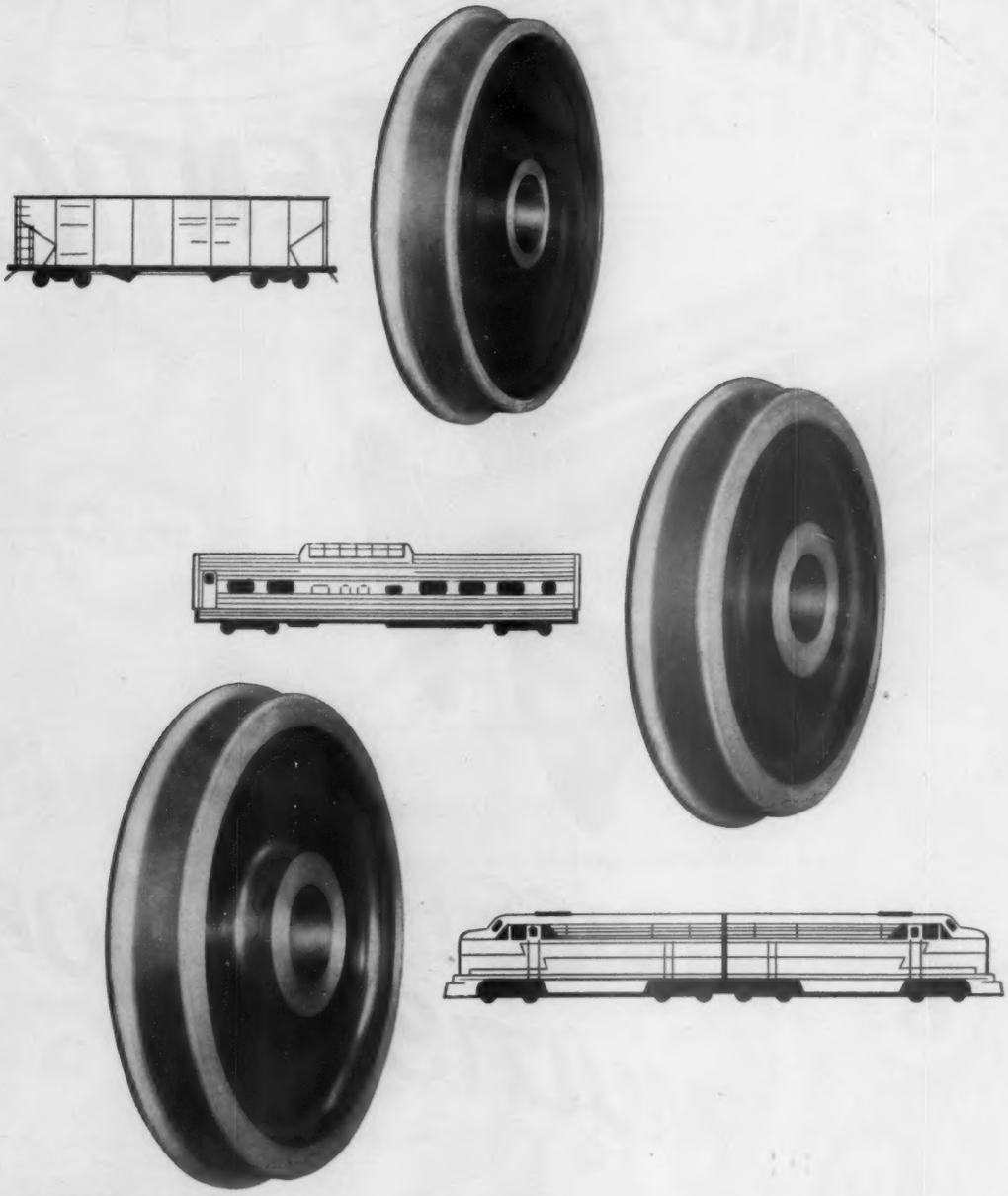
NATIONAL ALUMINATE CORPORATION
6200 West 66th Place • Chicago 38, Illinois

Canadian inquiries should be addressed to
Alchem, Limited, Burlington, Ontario

A Nalco PRODUCT

...Serving Railroads through Practical Applied Science

Published weekly by Simmons-Boardman Publishing Corporation, Orange, Conn. Executive Offices, 30 Church Street, New York 7, N. Y. Entered as second class matter at Orange, Conn., under the act of March 3, 1879. Subscription price $6.00 for one year, U. S. and Canada. Single copies, 50 cents each. Vol. 130, No. 11.



Bethlehem has always devoted unusual care to the metallurgical problems involved in making good railway wheels. Our metallurgists are constantly probing and searching, checking and cross-checking, in an effort to achieve perfection of analysis, forging, heat-treatment, and other factors.

When purchasing Bethlehem wrought-steel wheels for freight, passenger, and locomotive service, you do so with the assurance that they are unsurpassed anywhere. The quality that makes this possible is due in no small measure to the high standards of metallurgy set and maintained by Bethlehem technicians.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

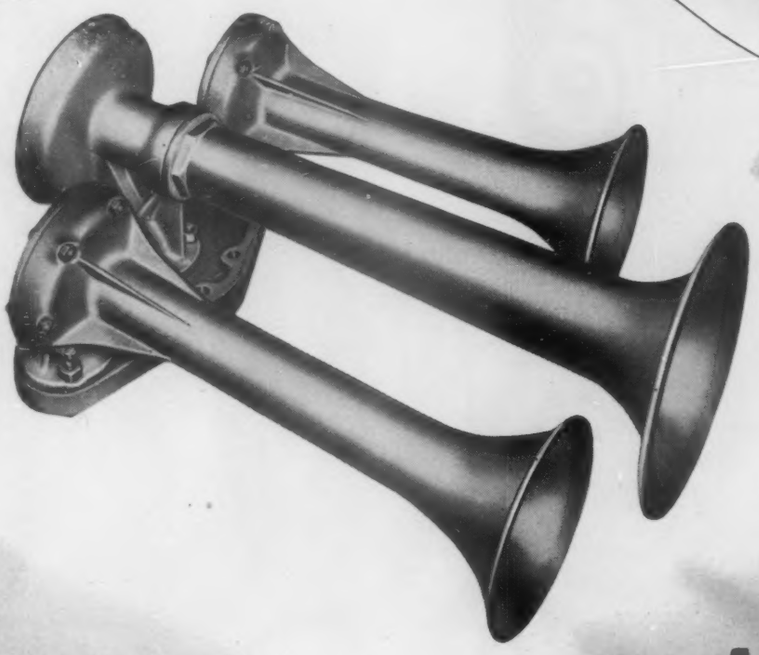
BETHLEHEM STEEL

BETHLEHEM WROUGHT-STEEL WHEELS

COMPANIONS TO BETHLEHEM FORGED-STEEL AXLES

FREIGHT • PASSENGER • DIESEL

TUNED FOR ATTENTION



WESTINGHOUSE MULTIBELL HORNS

This new E-2B puts the final touch of distinction on your Diesel locomotives. Melodious F-Major tone has maximum carry and quality . . . gives a dominant warning . . . also available in higher pitch. Two position valve for city and country volume. Present E-2 horns easily converted to E-2B. Ask for Descriptive Leaflet No. 2472-1 or for an "audition" in your office.

Brakes are Basic to Railroad Progress

Westinghouse Air Brake Co.

WILMERDING, PA.

Vol. 130, No. 11 March 19, 1951

RAILWAY AGE

With which are incorporated the Railway Review, the Railroad Gazette, and the Railway-Age Gazette. Name Registered in U. S. Patent Office and Trade Mark Office in Canada.

Simmons-Boardman Publishing Corporation: James G. Lyne, President. Samuel O. Dunn, Chairman Emeritus. J. S. Crane, Vice-President and Secretary. C. Miles Burpee, Harry H. Melville, C. W. Merriken, John R. Thompson, H. E. McCandless, Vice-Presidents. Robert G. Lewis, Assistant to President. Arthur J. McGinnis, Treasurer. Ralph E. Westerman, Assistant Treasurer.

EDITOR ..... James G. Lyne
EDITORIAL CONSULTANT ..... Samuel O. Dunn
MANAGING EDITOR ..... C. B. Tavenner
WESTERN EDITOR ..... William H. Schmidt, Jr.
NEWS & FINANCIAL EDITOR .... Gardner C. Hudson
WASHINGTON OFFICE . . .
Walter J. Taft Joe W. Kizzia
TRAFFIC & TRANSPORTATION DEPARTMENT . . .
Robert G. Lewis John W. Milliken
John S. Gallagher, Jr.
MECHANICAL DEPARTMENT . . .
C. B. Peck E. L. Woodward
H. C. Wilcox C. L. Combes G. J. Weihofen
ELECTRICAL DEPARTMENT ..... Alfred G. Oehler
ENGINEERING DEPARTMENT . . .
M. H. Dick Henry E. Michael
Norris V. Engman Radford E. Dove
PURCHASES & EQUIPMENT ..... Fred C. Miles
SIGNALING & COMMUNICATIONS DEPARTMENT . . .
John H. Dunn Maurice Peacock
WESTERN NEWS DEPARTMENT .. Arthur M. Cox, Jr.
ASSOCIATE EDITOR ... . Charles Layng
LIBRARIAN ..... Edith C. Stone
EDITORIAL ASSISTANT ..... Elaine C. Farrar

Subscriptions: including 52 regular weekly issues, and special daily editions published from time to time in New York or in places other than New York, payable in advance and postage free—United States, U. S. possessions and Canada: 1 year, $6.00; other countries not including daily editions in Western Hemisphere: 1 year, $10.00; 2 years, $16.00; other countries: 1 year, $15.00; 2 years, $25.00. Single copies, 50 cents each, except special issues.

H. E. McCandless, Circulation Manager, 30 Church Street, New York 7.

IN THIS ISSUE

EDITORIAL COMMENT:

A Wise Friend Utters a Word of Cheer and of Admonition 39

Look Who's Calling Whom a "Warmonger" 40

For Safety—Remove Steel Strapping 40

A Revised Plan for the Long Island 41

GENERAL ARTICLES:

Passenger Car Weights and Energy Consumption, by L. E. Blue 42

Flat Car for 250-Ton Loads 45

Signaling Both Tracks Both Ways on the Norfolk and Western 46

A.R.E.A. CONVENTION SECTION:

Mobilization-Minded Engineers Meet at Chicago 50

Abstracts of A.R.E.A. Committee Reports and Technical Addresses 55

DEPARTMENTS:

Communications 48

General News 69

Railway Officers 90

Current Publications 103

Revenues and Expenses 104

Office of Publication, Orange, Conn. Editorial and Executive Offices at 30 Church Street, New York 7, N. Y., and 79 West Monroe Street, Chicago 3, Ill. Washington 4, D. C.: 1081 National Press Building—Cleveland 13: Terminal Tower—Portland 5, Ore.: Terminal Sales Building—Los Angeles 17: 816 West Fifth Street—Dallas 4: 2909 Maple Avenue.

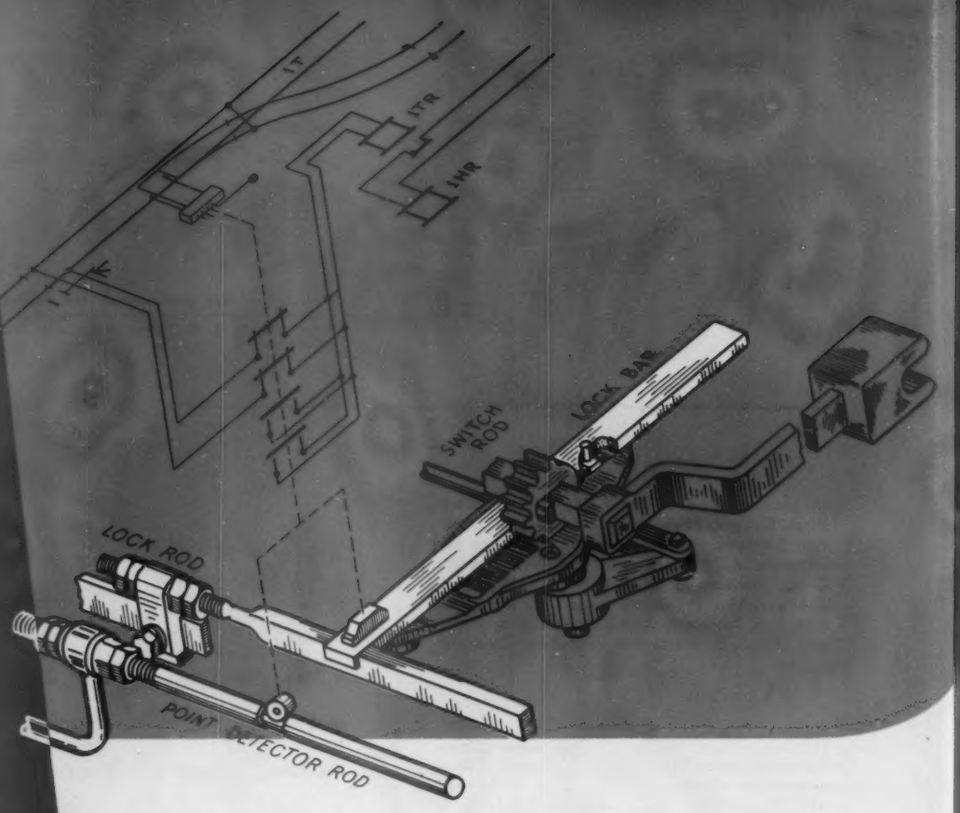
Published by SIMMONS-BOARDMAN PUBLISHING CORPORATION, New York 7

Railway Age Railway Mechanical & Electrical Engineer Railway Engineering & Maintenance
Railway Signaling & Communications Car Builders' Cyclopedia Locomotive Cyclopedia
Railway Engineering & Maintenance Cyclopedia American Builder
Marine Engineering & Shipping Review Marine Catalog & Buyers' Directory
Books covering transportation and building

Railway Age is a member of Associated Business Publications (A. B. P.) and Audit Bureau of Circulation (A. B. C.) and is indexed by the Industrial Arts Index and by the Engineering Index Service. Printed in U. S. A.

Built-in Circuit Controller *Safeguards* Hand-Operated Switches

"UNION" T-20 and T-21 SWITCH STANDS

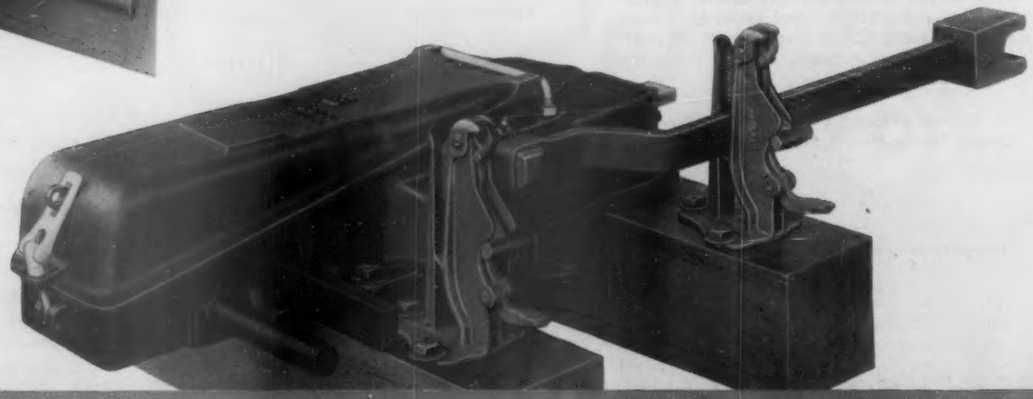


More than devices for merely throwing switches, "Union" T-20 and T-21* Switch Stands actually provide protection comparable to that of interlocked switches.

For example, "Union" Switch Stands incorporate a built-in circuit controller to prevent signals from clearing unless: (1) the mechanism is in the normal locked position, with the lock bar engaged in the lock rod notch and . . . (2) the switch points are properly positioned, as continuously checked by the point detector rod.

"Union" Switch Stands have many other features . . . too . . . which we'll be glad to tell you about if you'll ask our nearest district office.

"Union" T-20 and T-21 Switch Stands are the same except that the T-21 has a built-in target drive assembly



UNION SWITCH & SIGNAL COMPANY

SWISSVALE PENNSYLVANIA

NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO

WEEK AT A GLANCE

OFF TO A GOOD START: Estimated net income of Class I railroads for January was $56 million—more than four times the comparable figure for the first month of 1950. Traffic, as indicated by car loadings, has rebounded sharply since the switchmen recovered from their early February "illness." And the I.C.C. has at least acted promptly—although certainly not with extravagant liberality—in granting interim rate increases. Those facts, all reported in separate news stories, seem to bear out the predictions so generally made a couple of months ago by industry observers and financial analysts—that 1951 would be at least a relatively prosperous year for the railroads. There are, to be sure, some bearish factors in the picture—principally, of course, labor uncertainties and favored competitors, neither of which can be overlooked—but the year has (despite "sickness") gotten off to a better start than its immediate predecessor.

A WORD OF WARNING: "The present relative prosperity of the railroads may be shortlived unless railroad managers can contrive, while their prosperity lasts, to secure correction of the conditions which shrunk their earnings so sharply in the years following World War II." That conclusion, quoted from our leading editorial, is drawn from a recent study by an able railroad analyst, who declares that the attractiveness of railroad securities as private investments hinges very largely on the aggressiveness and effectiveness of railroad managements in combatting and reversing the adverse political factors which have so sorely afflicted the industry.

IN THE WEEK'S NEWS: Wabash to spend $3¾ million to enlarge Decatur, Ill., yard.—Freight cars on order March 1 total 154,861.—Pacific Great Eastern to be extended from Squamish south to Vancouver.—Court releases impounded C.G.W. dividends.—C.A.&E. strike ends.—Reid proposes two-state study of New York area transport.—Furlough fares continued to January 31, 1952.—Ten railroads get intrastate fare increase in New York.—K.C.S. authorizes nearly $6 million of construction work; projects totaling nearly $5 million under way or scheduled on W.P.—Pennsylvania declares dividend for 104th consecutive year.—Loomis testifies on wage case before Senate committee.

WOW! Three hundred eighty-seven diesel units—387; count 'em—is what the New York Central ordered last week, from all four major builders. It was the biggest single motive power commitment in the Central's history, and probably the largest single diesel purchase ever made by any one railroad, topping by about 10 per cent the big order placed by the Pennsylvania in 1950. Even without this Central diesel order, last week's equipment market was a good one. The Central itself bought 2,500 freight cars—rumored to be only the first installment of a much larger order to be completed within the next few weeks. The Canadian National bought 24 diesels and the K.C.S. four, while the Rock Island authorized purchase of 56—which will make its dieselization "virtually 100 per cent." And other railroads and private car lines ordered a total of 4,006 freight cars. The S.P. is expected to announce soon placement of orders for several thousand cars.

HOW MUCH MONEY? What tangible savings might be made in operating expenses if weights of passenger cars could be reduced without increasing the cost of the cars? This question is the theme of a brief but carefully documented paper by L. E. Blue, project engineer of the Pullman-Standard Car Manufacturing Company. It begins on page 42.

BOTH TRACKS BOTH WAYS: Between Bluestone, W. Va., and Powhatan—an 11-mi. section of line which includes the new Elkhorn tunnel—Norfolk & Western trains can run either way on either track. It's done, of course, under centralized traffic control, in an installation which is described, illustrated and diagrammed on pages 46-48.

250-TON FLATS: On page 45 is a short description, and two pictures, of a new Delaware & Hudson flat car with a load limit of over 250 tons.

THE A.R.E.A. REPORTS: A complete report of last week's 50th annual convention of the American Railway Engineering Association begins on page 49. Included in the pages which follow, in addition to a general story on the meeting itself, are brief abstracts of the numerous committee reports and of the principal addresses delivered during the three-day session.

PEACE, IT'S WONDERFUL! Especially, of course, when it is on one's own terms. Mack Truck's H. W. Dodge, for example, told a recent press luncheon in New York that he wants "peace" between the railroads and the commercial trucking industry. Yet the only kind of "peace" Mr. Dodge would really like would undoubtedly be one on the truckers' own terms—a fact which is bluntly stated in an editorial on page 40. The truckers, for example, would doubtless be quite willing to settle—temporarily—for "peace" on the basis of D.T.A. Administrator Knudson's letter to state governors, in which he asks that all truck weight limits now below the A.A.S.H.O. code be raised to that level, but that no reduction be made in any limits which are now above the code figures. The letter—parts of which sound as though they might have been written by the American Trucking Associations—is reported, with numerous direct quotations, in the news section. But it's a good safe bet that a truckers' "peace" wouldn't include any such highway use payments as those provided by New York state's new weight-distance tax (page 68). The new law—first of its kind in the east—was passed over the opposition of a powerful truck lobby whose activities Governor Dewey castigated in no uncertain terms.

ever have a pair of

There are authenticated records of the friction shoes on Barber Stabilized Trucks serving through 14 years of long and hard service, under war and peace conditions. This is a record unequalled—in fact not even approached!

The shoes should be checked periodically. If replacement is necessary, this can be done easily and cheaply, to provide a whole new life of easy riding. No dismantling of the trucks is required for the new shoe changeover.

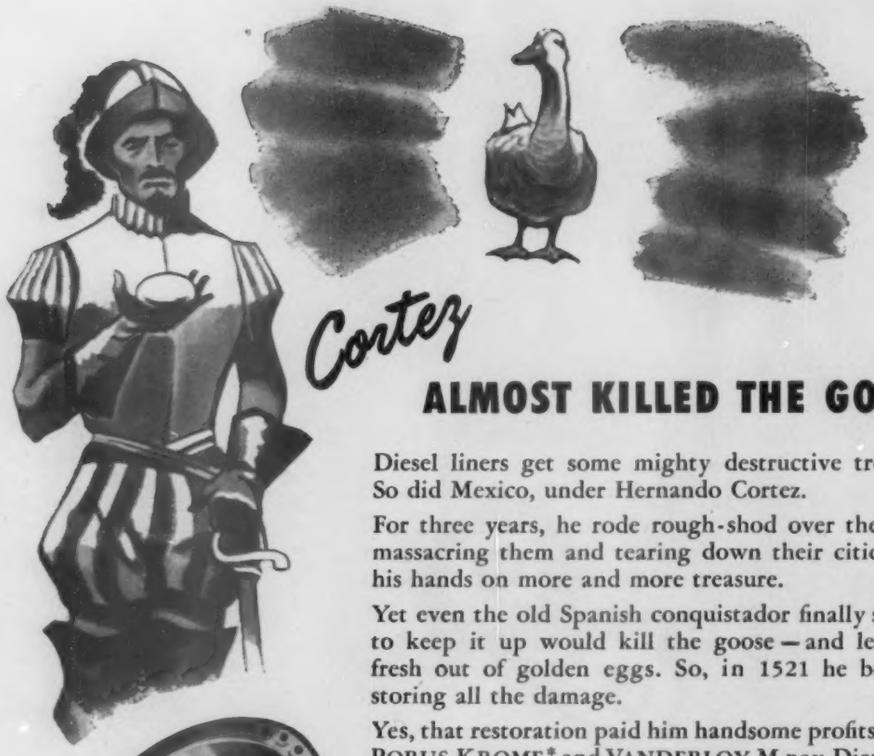
We have service engineers and instruction booklet to send wherever needed, to show the low installation cost of replacement parts.

B-5494

"shoes" wear 14 years?

Over 275,000 Car Sets of **BARBER STABILIZED TRUCKS** have been specified

STANDARD CAR TRUCK COMPANY
332 SOUTH MICHIGAN AVE., CHICAGO, ILL.



Cortez

ALMOST KILLED THE GOOSE!

Diesel liners get some mighty destructive treatment. So did Mexico, under Hernando Cortez.

For three years, he rode rough-shod over the Aztecs, massacring them and tearing down their cities to get his hands on more and more treasure.

Yet even the old Spanish conquistador finally saw that to keep it up would kill the goose — and leave him fresh out of golden eggs. So, in 1521 he began restoring all the damage.

Yes, that restoration paid him handsome profits—just as PORUS-KROME* and VANDERLOY M pay Diesel users. They are particularly glad now — with replacement parts in critical supply—to have long-wearing PORUS-KROME liners, that can be renewed almost indefinitely.

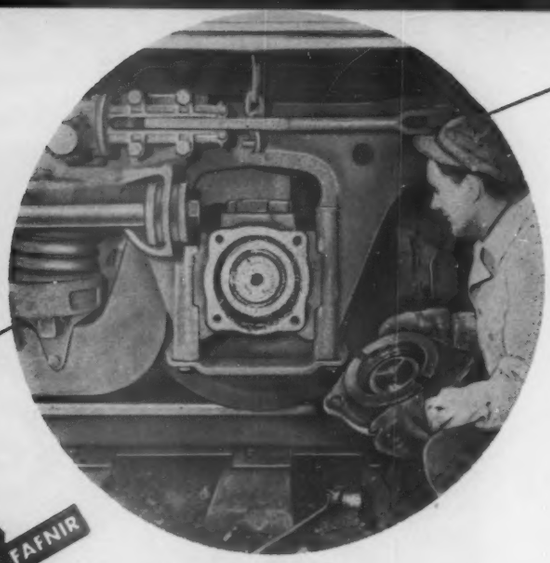
As for engine parts already made useless by the practice of remachining their bearing diameters — well, even junk liners — and *crankshafts* too — are restored to original dimensions with VANDERLOY M. It gives them a longer service life than new ones. And each restoration costs as little as the first.

**PORUS-KROME is dense, hard, wear and corrosion-resistant chromium applied by the exclusive Van der Horst process which gives working surfaces an infinite number of tiny oil-resisting reservoirs for perfected lubrication.*

VAN DER HORST CORPORATION OF AMERICA • OLEAN, N. Y.

U. S. PATENTS 2,048,578, 2,314,604 and 2,412,698

PORUS - KROME VAN DER HORST



LUBRIKO GREASE

M-1 SPECIAL
FOR ROLLER BEARING CAR JOURNALS

YOUR Roller Bearing Car Journals Should Be GREASE LUBRICATED

...here's ALL FOUR famous makes of bearings— LUBRIKOLUBRICATED!

This group of pictures marks a milestone in progress. All four famous makes of bearings are shown with Lubriko Grease lubrication. The pictures were made from trains in actual daily use...not on tests. LUBRIKO M-1 SPECIAL GREASE FOR RAILROADS is past the test stage for car journals—it is now proved and approved for grease lubricated roller bearing car journals of all makes.

The change over from oil to grease can, in most instances, be made without mechanical changes in equipment. The change in terms of dollars saved and efficiency gained means many thousands of dollars to the well-known railroads who are now taking this step.*

THE TEST TELLS

A. A. R.
APPROVED FOR INTERCHANGE

ENGINEERING DATA UPON REQUEST

You are SAFE with LUBRIKO
THE MASTER LUBRICANT

MASTER LUBRICANTS COMPANY PHILADELPHIA, PA.

MANUFACTURERS OF HIGH-GRADE INDUSTRIAL LUBRICANTS FOR OVER 50 YEARS
LOS ANGELES • BOSTON • SAN FRANCISCO
Incorporated 1908 Established 1891

THERE are many reasons why U·S·S Wrought Steel Diesel Wheels are so often first choice on all types and makes of Diesel locomotives, but the prime determining factor is their proven ability to match the superior efficiency of the power unit with superior dependability in the wheels on which it rolls. Today's finest Diesel locomotives are equipped with U·S·S Wrought Steel Diesel Wheels.

U·S·S Wrought Steel Diesel Wheels help Diesel locomotives maintain their reputation for high earning power, round-the-clock availability and superb performance. And they assure long-mileage safety, even under the high speeds demanded of today's trains. They're economical to maintain, too, because they're made only from uniform, high-grade steel that is carefully controlled in forging, rolling and heat-treating to produce wheels highly resistant to stresses of heavy wheel loads, torque and lateral forces.

Rugged, punishment-absorbing U·S·S Wrought Steel Diesel Wheels can be furnished in 33, 36, 38, 40, and 42-inch diameters—either rim toughened or entirely quenched.

The next time you order wheels for new equipment or replacements, specify U·S·S Wrought Steel Diesel Wheels. They're available from two convenient sources of supply: Pittsburgh, Pennsylvania, and Gary, Indiana.

UNITED STATES STEEL COMPANY, PITTSBURGH
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S WROUGHT STEEL

DIESEL LOCOMOTIVE WHEELS

UNITED

OF THE DIESEL FIELD...
U·S·S WHEELS
U·S·S WROUGHT STEEL WHEELS
STATES STEEL

Aeroquip

REG TRADE MARK

SELF-SEALING COUPLINGS

Aeroquip provides the fastest, most economical method known for disconnecting and reconnecting charged, fluid-carrying lines. One coupling takes the place of two hand-operated valves. It reduces downtime for service and maintenance and permits speedy interchangeability of accessories. Used with water, hydraulic fluid, oil, diesel fuel, gasoline and refrigerant gas lines.

AEROQUIP CORPORATION

JACKSON, MICHIGAN

SALES OFFICES AND WAREHOUSES: 1051 NO. HOLLYWOOD WAY, BURBANK, CALIF. · 1215 SO. EAST GRAND AVE., PORTLAND 14, ORE. · 2912 N. E. 28TH ST., FORT WORTH 11, TEXAS · P. O. BOX 1586, HIGH POINT, NORTH CAROLINA · 4301 N. W. 36TH ST., MIAMI SPRINGS, FLORIDA · 72-74 STAFFORD STREET, TORONTO, CANADA

SALES OFFICES: 303 WAREHAM BLDG., HAGERSTOWN, MD. · EDINA BRANCH—BOX NO. 44, MINNEAPOLIS 10, MINN.

AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U. S. A. AND ABROAD

SCENE: *Model 10* **AUTOMATIC SIGNAL IN ACTION**

Unseen—by the impatient motorist—is an on-rushing second train, concealed by the first. But there's no danger here of a dreaded "second train accident." Model 10's flashing lights will *continue* to operate, and the barrier arm will *remain* down until both trains have cleared the crossing.

Unseen—something that can't be illustrated: Model 10 *dependability*. Model 10's operate unfailingly, even when temperatures are extremely high or low... and regardless of snow or sleet. Moreover, Model 10's are on the job 24 hours a day—never go "off duty."

Unseen—the safety record established by Model 10's: Since 1936, thousands of these signals have been placed in operation at busy crossings, and *not a single accident has ever occurred as a result of operation failure.*

Unseen—the considerable dollar-and-cents economies effected by Model 10 protection. The low cost of Model 10 installation, operation, and maintenance is written in the records of a hundred railroads.

There's much more to tell about Model 10 safety and economy. Write for Brochure 748 RA-3

CERTIFICATE OF MERIT for Safety AWARDED WESTERN RAILROAD SUPPLY CO. BY THE NEW YORK HERALD TRIBUNE FORUM ON SCIENCE AND INDUSTRY

WESTERN RAILROAD SUPPLY COMPANY

General Offices and Factory:
2428 SOUTH ASHLAND AVENUE • CHICAGO 8, ILLINOIS

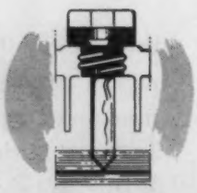
Meet Your Schedules with GOULD-EQUIPPED DIESELS!

Gould Batteries with new "Z" Plates have the extra reserve capacity that you need to keep your engines available. 96% of the working surface of these plates is *regenerative* power-producing material. Grids are 66% more resistant. Porosity of grid metal is reduced 85%.

GOULD BATTERIES with NEW "Z" PLATES
are America's Finest Diesel Starting Batteries

Only Gould has the "Z" Plate that enables Gould Batteries to operate at full capacity more months—stay new longer.

Gould Batteries with Televel Vents save time and trouble—show electrolyte level without removal of vent caps.



Gould's periodic inspection service and technical assistance help keep engines available—enable diesels to meet schedules.

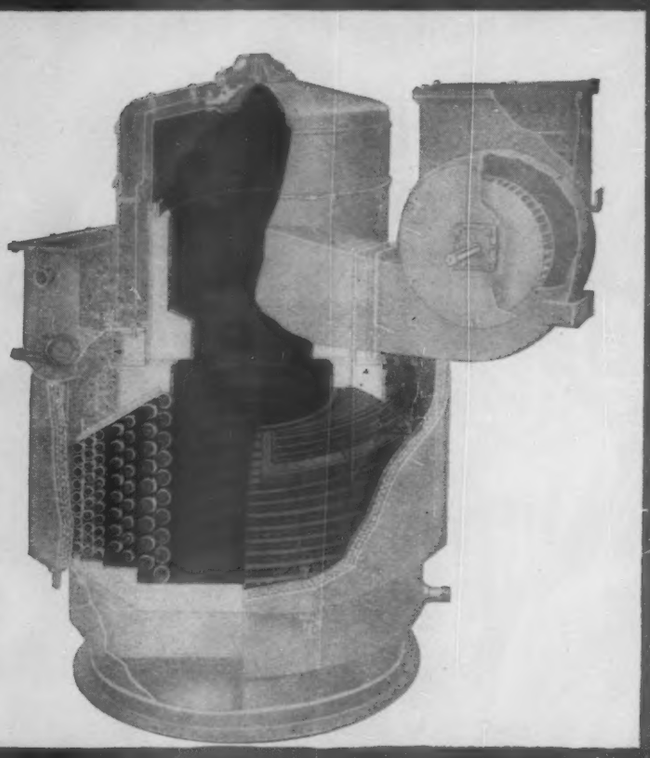
GOULD
STORAGE BATTERIES
GOULD-NATIONAL BATTERIES, INC.*
TRENTON 7, NEW JERSEY
Always Use Gould-National Automobile and Truck Batteries
*Formerly Gould Storage Battery Corporation

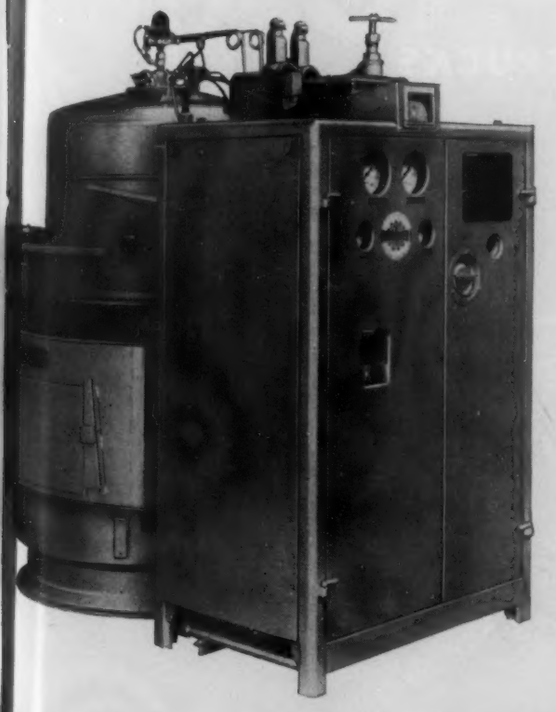
Simplified

STRAIGHT-THRU SINGLE PASS CIRCULATION

VAPOR STEAM GENERATOR

An exclusive Vapor development which means that every bit of water in the coils must go through all of the heating surfaces *without any of it being bypassed or short circuited through alternate paths.* Up to 1,000,000 miles of coil life is available thru Vapor's One Pass Water Circulation with Simple Water Treatment.





VAPOR

HIGH EFFICIENCY. STEAM GENERATOR

. . . uses less water per pound of steam delivered at the train line and it delivers this steam at 99.5° of dryness.

Its extremely high oil burning efficiency evaporates 13 pounds of water to 1 pound of fuel oil. (Over 84% efficiency)

Vapor Steam Generators speed up train schedules by requiring fewer stops to take on water and by delivering *more mileage out of a tank of water* than any other type of steam generator. Vapor Steam Generators are lowest in initial cost, lowest in maintenance cost, and offer the highest reliability.

Congratulations to the Illinois Central Railroad on its 100th Anniversary.

VAPOR HEATING *Corporation*
80 East Jackson Blvd., Chicago 4, Illinois

VAPOR "OK" CONTROLS
VAPOR INTENSIFIED COMBUSTION

NEW YORK • ST. PAUL • DENVER • ST. LOUIS • PORTLAND • WASHINGTON • PHILADELPHIA
SAN FRANCISCO • JACKSONVILLE • RICHMOND • HOUSTON • MONTREAL • LOS ANGELES

or extra-protection
of your "extra-fare"
freight.... SCULLIN L 50 V TRUCKS

LATERAL VERTICAL
CUSHIONED MOTION

the smoothest
traffic-builder
between
LCL
and your rails

STEEL CASTINGS MANUFACTURED

NEW YORK
CHICAGO
CLEVELAND
BALTIMORE
RICHMOND, VA.

SCULLIN STEEL CO.

SAINT LOUIS 10, MISSOURI

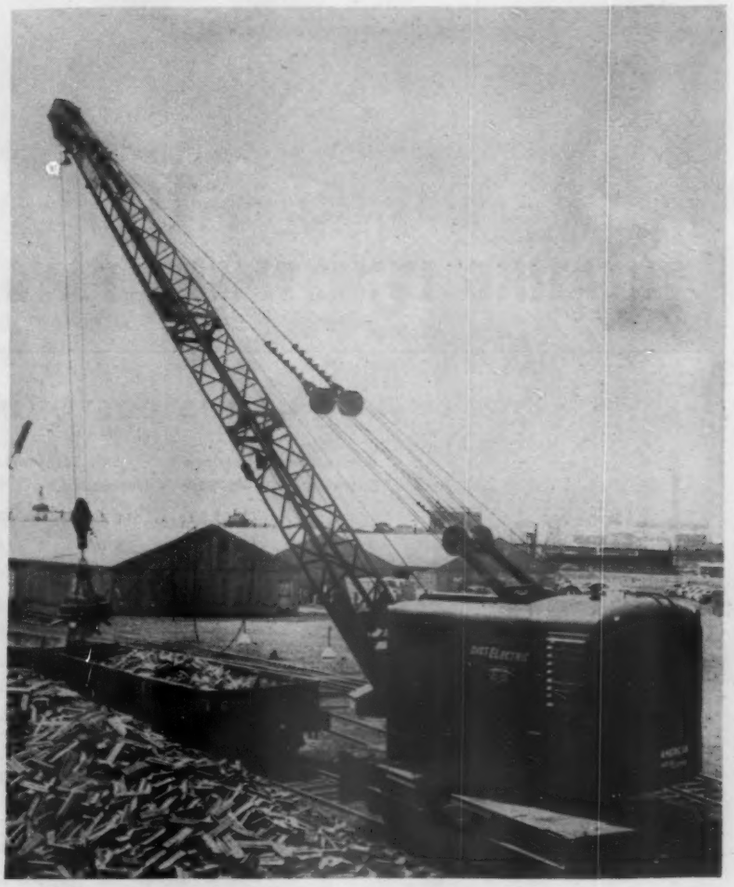
500 tons a day

THAT'S pig iron going into the gondola. It comes from the blast furnace of Eastern Gas and Fuel Associates, Everett, Massachusetts.

Before they bought their American DiesELectric, Eastern used a steam crane for this work. It was light for the job and required constant repairs resulting in a large loss of productive time. During operation, production was lost while the crane made frequent stops for refueling. When the steam crane was not required on the job, additional manpower was needed to clean and keep the fire going to maintain steam in the boiler.

The DiesELectric, with diesel power to the deck, electric power to the wheels, does much more work with fewer man hours. It loads 500 tons of pigs a day; switches full cars out, empties in. Starts work at the push of a button . . . and keeps going without interruption. Fuel cost for a day is about the price of a good lunch.

Maybe *you* should have an American DiesELectric. Why not mail the coupon, for additional facts.



Modernize...economize...with

American Hoist
& Derrick Company
ST. PAUL 1, MINNESOTA

69 **Mail this coupon** 1602

American Hoist & Derrick Co.
St. Paul 1, Minnesota

● Please send literature on

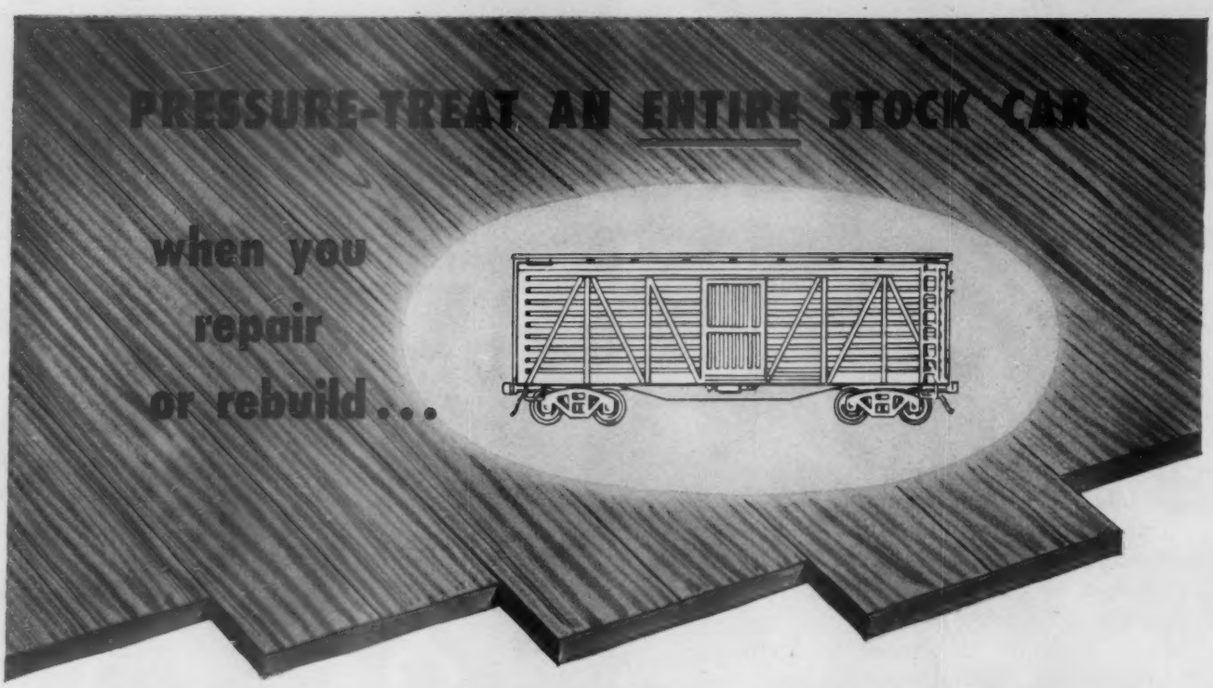
AMERICAN DIESELECTRIC LOCOMOTIVE CRANES

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____



TREATING INVESTMENT PAYS 63.4% ANNUALLY!

HERE IS THE COST COMPARISON

	Average cost in place		Est. Service Life		Annual Cost		Saving
	Untreated	Treated	Untreated	Treated	Untreated	Treated	Per Year
FLOORING	$176.25	$211.50	5 yrs.	18 yrs.	$35.25	$11.75	$23.50
SLATS	84.00	100.80	5 yrs.	18 yrs.	16.80	5.60	11.20
ROOFING	75.45	90.54	5 yrs.	18 yrs.	15.09	5.03	10.06
NAILING SILLS	47.55	57.06	6 yrs.	18 yrs.	7.93	3.17	4.76
FRAMING	60.30	72.36	6 yrs.	18 yrs.	10.05	4.02	6.03
RUNNING BOARDS	12.90	15.48	4 yrs.	18 yrs.	3.23	.86	2.37
SADDLE BLOCKS	7.35	8.82	5 yrs.	18 yrs.	1.47	.49	.98
ENTIRE CAR	$463.80	$556.56			$89.82	$30.92	$58.90

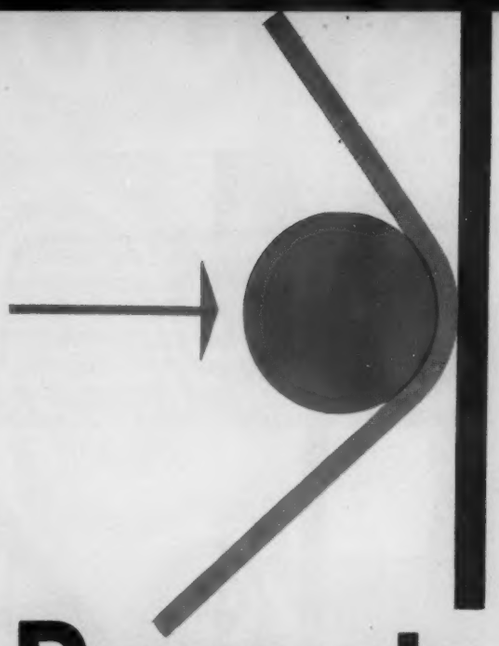
Treatment Cost—$92.76 Annual Saving—$58.90 Annual Return—63.4%

● An annual saving of $58.90 on each stock car you own is well worth investigating. Savings on flat and open-top cars are comparable.

Let us make a free analysis and report based on the rolling stock and purchasing procedures of your railroad. For such a service, write, wire or phone Mr. R. H. Bescher, Manager, Technical Department, Orrville, Ohio.

KOPPERS PRESSURE-TREATED WOOD

KOPPERS COMPANY, INC. • Pittsburgh 19, Pa.



Power to STOP

Smoothly···Surely···Safely

in all kinds of weather

What stops a train? It's the friction developed between braking medium and a *moving* surface. If braking force exceeds wheel-rail adhesion (the force which turns the wheels), slippage results and braking effect is lost.

Wheel-rail adhesion is a variable quantity, determined by train speed and the condition of wheel treads and rail surfaces. It is greatest when both are clean and dry; least when wet and slippery. Thus, the wiping effect of shoe-on-tread braking makes a big difference in stopping.

Millions of stops over billions of miles have proved that *on-tread* Simplex Clasp Brakes—with their drying, scouring action—assure dependable Power-to-Stop, whatever the requirements.

STREAMLINED • LIGHTWEIGHT

SIMPLEX

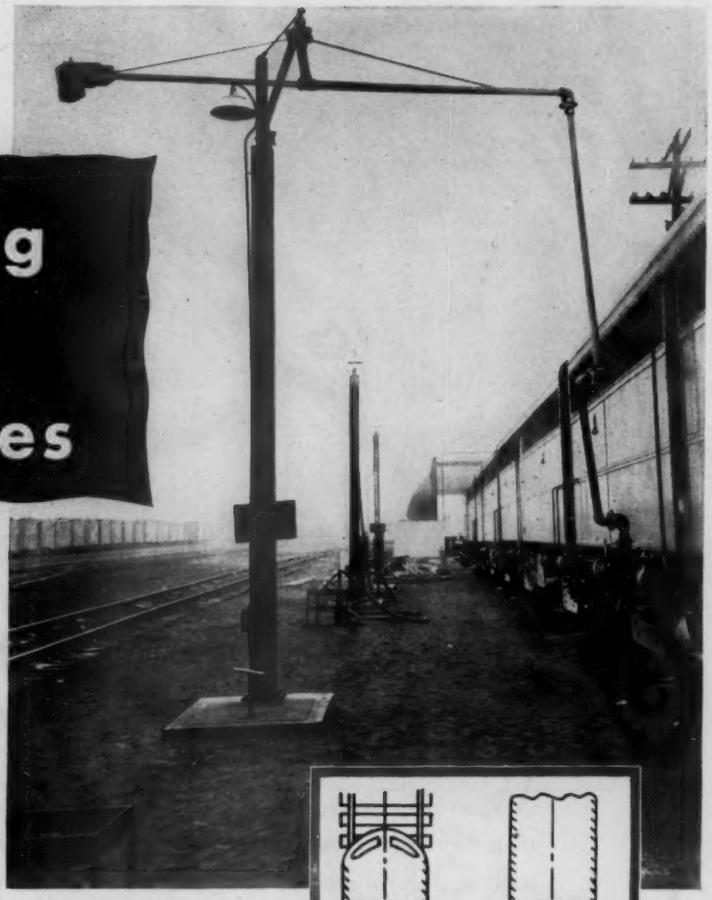
UNIT CYLINDER CLASP BRAKES

AMERICAN STEEL FOUNDRIES

HINT MARK OF FINE PRODUCTS

New!

For Fueling Diesel Locomotives



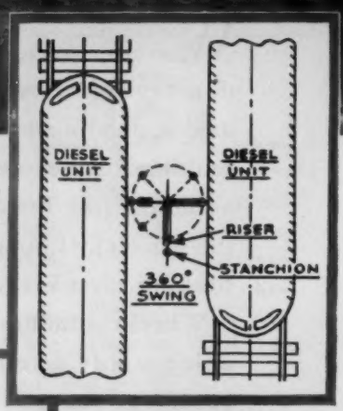
Here is Barco's new assembly for fueling diesel electric locomotives! Specially designed for railroad service, it gives you everything you want for a permanent installation.

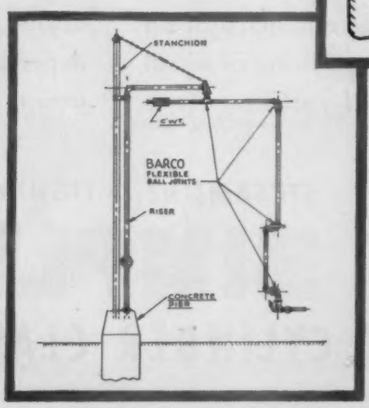
FLEXIBLE, VERSATILE! Assemblies are fitted with Barco Flexible Ball Joints in the piping which permit quick fueling connections to tracks on either side—CLOSE SPOTTING OF ENGINES IS NOT NECESSARY.

LEAKPROOF, TROUBLE-FREE! All Barco Flexible Joints in assemblies are of the leakproof L-2 type with long life gaskets especially suitable for handling diesel fuel oil. Regularly furnished in malleable iron but also available with magnesium pipe and joints for light weight and easy handling.

ENGINEERING RECOMMENDATIONS—Barco factory and field engineers are at your service to help you plan modern, efficient, economical fueling arrangements. Call or write today! ASK FOR NEW BULLETIN 1150. BARCO MFG. CO., 1800D Winnemac Avenue, Chicago 40, Ill. In Canada: The Holden Co., Ltd., Montreal.

The above picture shows a new Barco Diesel Fueling Assembly of the type now being specified and installed on leading railroads. This installation, serving two tracks, is swung parallel to the tracks when not in use.





(Above) **Sketch shows typical installation of Barco Fueling Assembly between tracks where it will serve either side.**

(Left) **This diagram, showing the arrangement of the assembly, can be varied to meet different conditions. A simpler arrangement is available to serve only one track.**

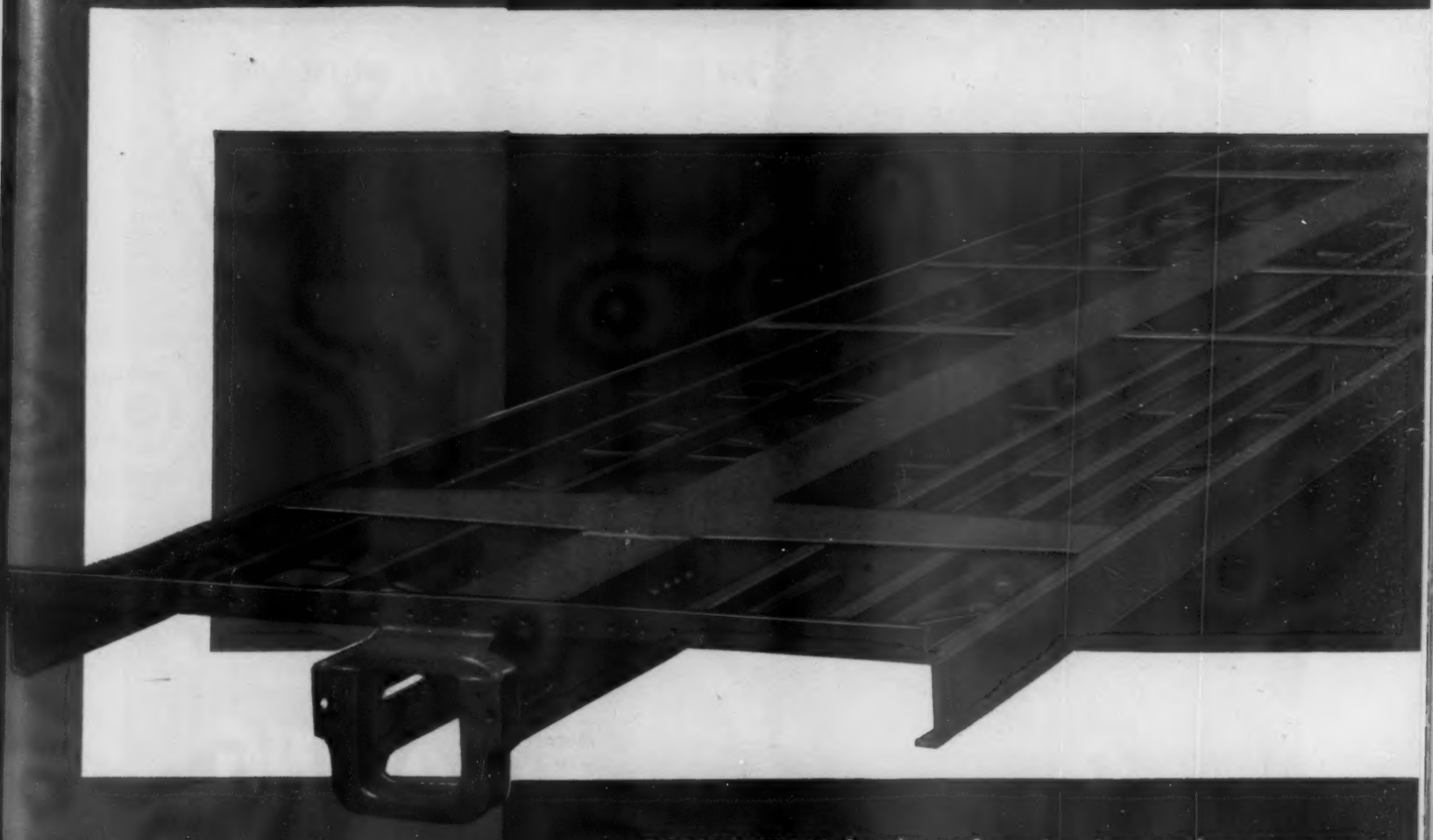
BARCO DIESEL FUELING ASSEMBLIES

The Only Truly Complete Line of Flexible Ball, Swivel, Swing, and Revolving Joints

FREE ENTERPRISE–THE CORNERSTONE OF AMERICAN PROSPERITY

"BAD ORDER" REPORTS INSPIRED THE *International underframe*

All DOWN-HAND welded, with maximum use of automatic and semi-automatic arc welding, this NEW CONCEPT in underframes comes equipped as a complete unit, upon specification, with couplers, draft gears, air-brake equipment brackets, piping, lever carriers, etc.



- Body bolster top cover plate designed to eliminate cracking and buckling. A continuous plate from side-sill to side-sill.
- Full box-section bolsters and cross-bearers.
- Continuous channel side-sills.
- Integral cast-steel center fillers-rear draft lugs.
- Integral cast-steel striker-front draft lugs.
- A.A.R. requirements equalled OR SURPASSED in every feature.

REALIZATION that loss of service time and revenue and recurrent maintenance expense were being caused by the SAME STRUCTURAL FAULTS YEAR AFTER YEAR induced the development of INTERNATIONAL'S CAR UNDERFRAMES.

A FRESH ENGINEERING APPROACH—based on service weaknesses and car structure failures—was inaugurated. Past practices and existing designs were critically examined. The result: THIS MUCH STURDIER UNDERFRAME INCORPORATING A MAXIMUM UTILIZATION OF MATERIAL SECTION WITH MINIMUM WEIGHT.

INTERNATIONAL STEEL CO.

RAILWAY DIVISION

Evansville 7, Indiana

GREATER HOLDING STRENGTH WHEN YOU NAIL TO N-S-F

Blocking a load to N-S-F means that only the nail is distorted. The floor remains undamaged—lading is secured by steel. Ribbed surface increases floor strength and provides recesses for anti-skid material. Plastic groove-filler operates to seal space when nails are withdrawn.

NAILABLE STEEL FLOORING

...Now Used by 40 Leading Roads

Every month, more and more freight cars are being equipped with NAILABLE STEEL FLOORING. This growing acceptance of N-S-F by America's leading railroads is due to two major factors:

N-S-F's strength and durability mean greater operating economy.

N-S-F and its exclusive nailing feature means greater security for lading of all kinds.

These characteristics of N-S-F mean greater structural strength for your boxcars... greater efficiency in your overall operation.

GREAT LAKES STEEL CORPORATION
Steel Floor Division • Ecorse, Detroit 29, Michigan

PRODUCER OF NAX HIGH-STRENGTH STEEL

NATIONAL STEEL CORPORATION

WHEREVER YOU USE WOOD..

IN FRESH WATER, many preservatives leach out of wood. Barrett* Coal-Tar Creosote resists this leaching action. Being only negligibly soluble in water, it is the preferred preservative for use on submerged wood structures, or those exposed to the powerful action of rapidly flowing water.

IN THE NORTH, poles must resist the tremendous weight of frequent sleet storms. Avoid preservatives which *weaken* the wood. BARRETT Coal-Tar Creosote allows poles to retain their maximum strength, and helps to keep the poles at their best and hold the lines aloft.

IN THE SOUTH, prolonged high temperatures cause light-bodied preservatives to leach and evaporate from the wood, thus exposing the wood to termite attack and decay. BARRETT Coal-Tar Creosote, heavier bodied and of lower volatility, prevents this condition. It stays in the wood longer under all conditions—doesn't "run out" on the job.

IN THE DESERT, crossties broom, shatter and split from extreme dryness and heat. Solutions made with BARRETT Coal-Tar Creosote retard this, and also reduce mechanical wear of crossties through their lubricating action on the wood fibers. In poles, heavy treatment with BARRETT Coal-Tar Creosote substantially reduces checking and splitting.

IN THE SWAMPS, forces of decay are almost at their maximum of destructive power. High moisture content and infection from other decaying wood and debris are ever-present menaces. Poles properly treated with Coal-Tar Creosote have survived under swamp conditions for years.

IN SALT WATER, marine wood-borers give a preservative its severest test. Of hundreds of preservatives that have been tried through the years, *Coal-Tar* Creosote is the only one that has proved consistently effective against teredos, limnoria and other salt-water enemies of wood.

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

Use Barrett* →

*Reg. U. S. Pat. Off.

Only coal-tar creosote wood preservative has been used long enough and widely enough to have proved its effectiveness under all conditions.

COAL TAR CREOSOTE

BALLAST IS SCREENED BY CONTRACT— ELIMINATING INVESTMENT BY RAILROADS IN THIS ONE-OPERATION EQUIPMENT . . .

Stone ballast cleaned by the Speno method is thoroughly cleaned because it is screened twice. In order to obtain a thorough cleaning, two passes are necessary to restore the ballast to as clean a condition as when it was originally placed in the track. The two passes are accomplished in less time than a single pass by other mechanical methods.

Preferably, the ballast is cleaned ahead of a general track raise, and under the Speno method, no cribbing is necessary. Because of the drainage that the Speno method attains, the cleaning lasts from one general raise until it is time for another general raise, normally over a period of from three to six years, depending on conditions.

Speno equipment working under traffic without interference with railroad operation, (the track adjacent to the one being worked is not fouled by our equipment in working position) easily keeps ahead of track raising programs.

The high production and low cost of this service are worthy of consideration.

Ask the Railroads That Have Used Us!

FRANK SPENO RAILROAD BALLAST CLEANING CO. INC.

306 North Cayuga Street — Ithaca, New York

Under the constant pounding of heavy truck traffic and the most damaging weather conditions, Permacrete Crossing Slabs have established outstanding records of service and safety. Today, on many important roads, they're the accepted standard of low cost, permanent type crossings requiring a minimum of maintenance.

These steel reinforced, precast concrete slabs are made under strict quality-control methods. The convenient 6' length permits easy installation and removal for roadbed maintenance, with "off track" equipment. Permacrete Crossings can be lengthened without disrupting traffic and the slabs salvaged if the crossing is eliminated. Intermediate and end slabs with properly shaped filler and flangeway pieces provide a complete, easy-to-install package unit.

If you want proof of the rugged, dependable service of Permacrete Crossings, we'll be glad to work with you in making a test installation. Write today for further information.

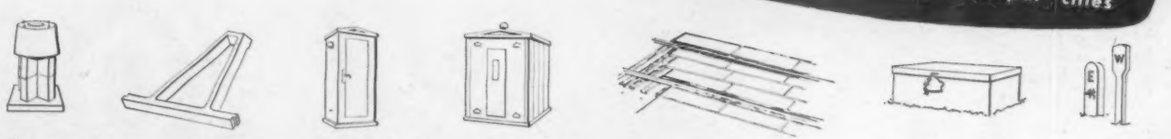
CROSSING SLAB DETAILS

FILLER and FLANGEWAY
Creosoted oak fillers and flangeways shaped to fit various rail sections assure thoroughly tight and firm crossing installations.

HOLD DOWN DEVICE
Where crossings are subjected to extremely heavy, high-speed traffic, Permacrete Crossing Slabs can be supplied with 2 or 4 hold down devices.

SIZES
6' long, 16¾" wide and from 5" to 8" thick. 2" steel channel armor cast in top edges.

PERMACRETE
PRODUCTS CORPORATION
COLUMBUS 7, OHIO
Plants and offices in principal cities



FOUNDATIONS CRIBBING BOOTHS HOUSES CROSSING SLABS BATTERY BOXES POSTS

THE MOST COMPLETE LINE OF SECTIONAL *Precast Concrete* RAILROAD PRODUCTS

Here's where you can save PLENTY!

IT TAKES a major investment in tools and facilities to equip a factory for rebuilding the principal components of Diesel locomotives.

These rebuilding jobs recur at irregular and infrequent intervals, leaving long periods when such facilities might not be needed at all by an individual railroad.

So Electro-Motive started—several years ago—to build up a network of such factories where the work of many railroads could be pooled, freeing individual railroads from the necessity of making such major and unproductive investments themselves.

As a result there stand today, at six strategic points, factory branches which not only save the railroads the investment, but also turn out a quality of work obtainable no other way.

For Electro-Motive Factory Branches are equipped with the latest, most modern tools and facilities—and staffed by specially trained personnel—to rebuild Diesel locomotive components with the same techniques and standards used at the factory in original manufacture.

Beyond this, and most important, they are equipped to put into the rebuild job all the improvements in parts and advances in technology that are constantly being developed at the parent plants.

The result of all this is that Electro-Motive offers railroad customers top quality rebuilds at lowest cost—with a full guarantee of new-part performance on every rebuilt assembly.

Some of the specialized tools and equipment at Electro-Motive's Branch Factories

What we mean by "Unit Exchange"

There are two ways in which components may be sent to Electro-Motive for rebuilding. "Rebuild and Return" involves the rebuild and return of the customer's property. "Unit Exchange" means the immediate delivery of a previously rebuilt and fully guaranteed component in exchange for one needing rebuilding sent in by the customer. You pay only for the work needed to bring the assembly to top-quality standards at Electro-Motive's low flat-rate charge.

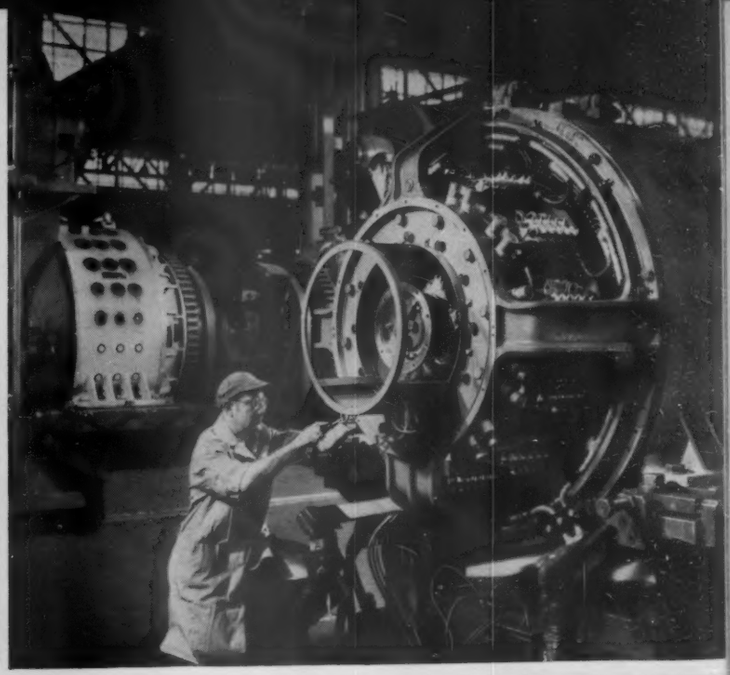
ELECTRO-MOTIVE DIVISION

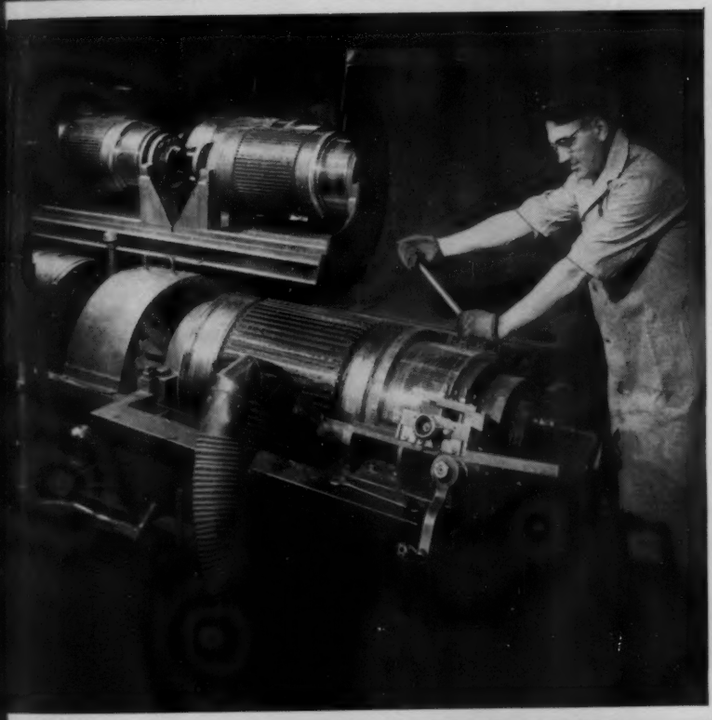
GENERAL MOTORS • LA GRANGE, ILL.

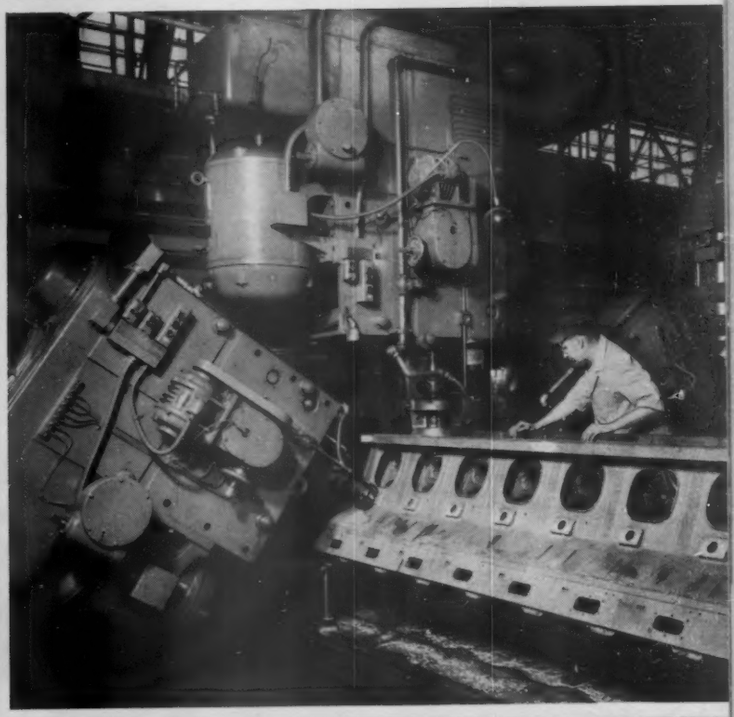
Home of the Diesel Locomotive

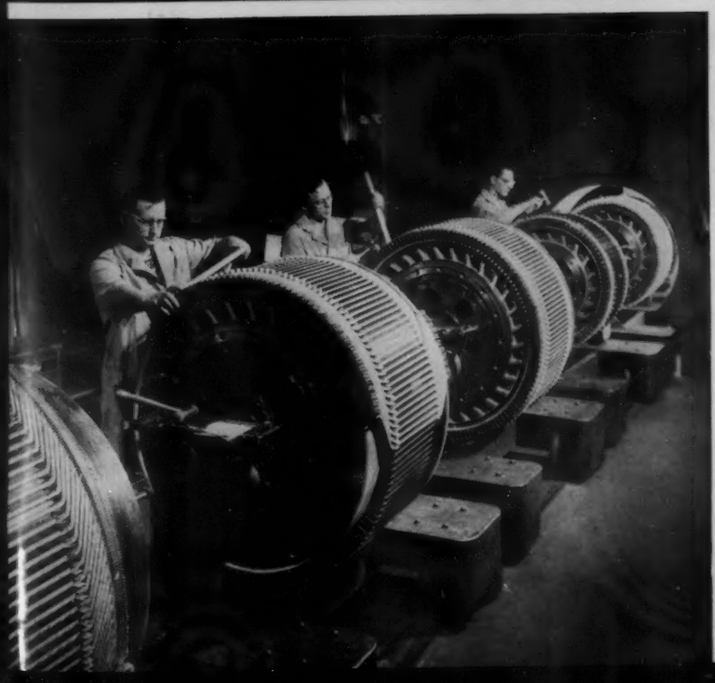
GENERAL MOTORS LOCOMOTIVES

In Canada: GENERAL MOTORS DIESEL, LTD.
London, Ontario









WHERE THAT EXTRA 1½¢ PER DAY *pays off!*

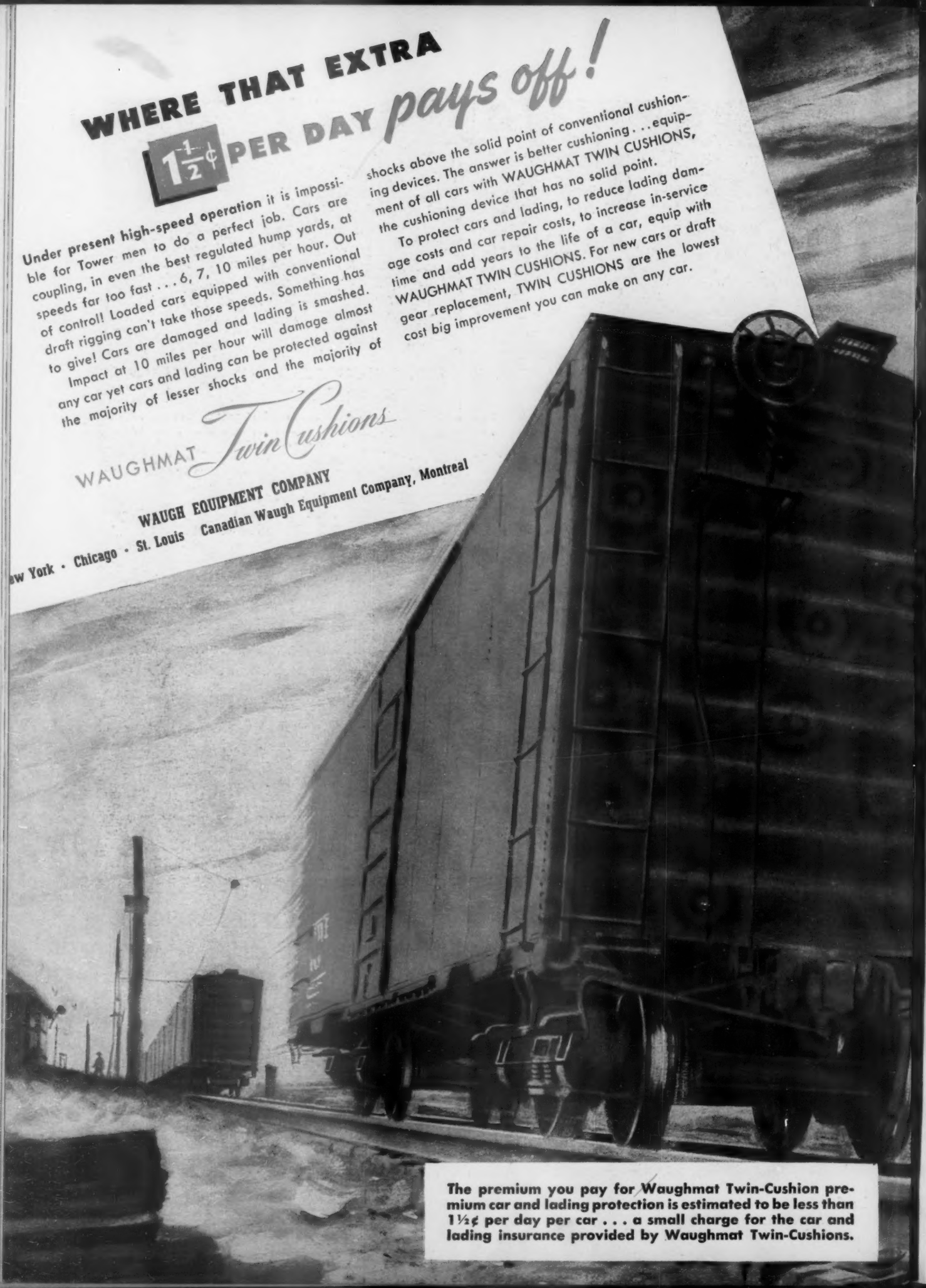
Under present high-speed operation it is impossible for Tower men to do a perfect job. Cars are coupling, in even the best regulated hump yards, at speeds far too fast . . . 6, 7, 10 miles per hour. Out of control! Loaded cars equipped with conventional draft rigging can't take those speeds. Something has to give! Cars are damaged and lading is smashed. Impact at 10 miles per hour will damage almost any car yet cars and lading can be protected against the majority of lesser shocks and the majority of shocks above the solid point of conventional cushioning devices. The answer is better cushioning . . . equipment of all cars with WAUGHMAT TWIN CUSHIONS, the cushioning device that has no solid point.

To protect cars and lading, to reduce lading damage costs and car repair costs, to increase in-service time and add years to the life of a car, equip with WAUGHMAT TWIN CUSHIONS. For new cars or draft gear replacement, TWIN CUSHIONS are the lowest cost big improvement you can make on any car.

WAUGHMAT *Twin Cushions*

WAUGH EQUIPMENT COMPANY

ew York • Chicago • St. Louis Canadian Waugh Equipment Company, Montreal



The premium you pay for Waughmat Twin-Cushion premium car and lading protection is estimated to be less than 1½¢ per day per car . . . a small charge for the car and lading insurance provided by Waughmat Twin-Cushions.

UNARCO INSUTAPE®

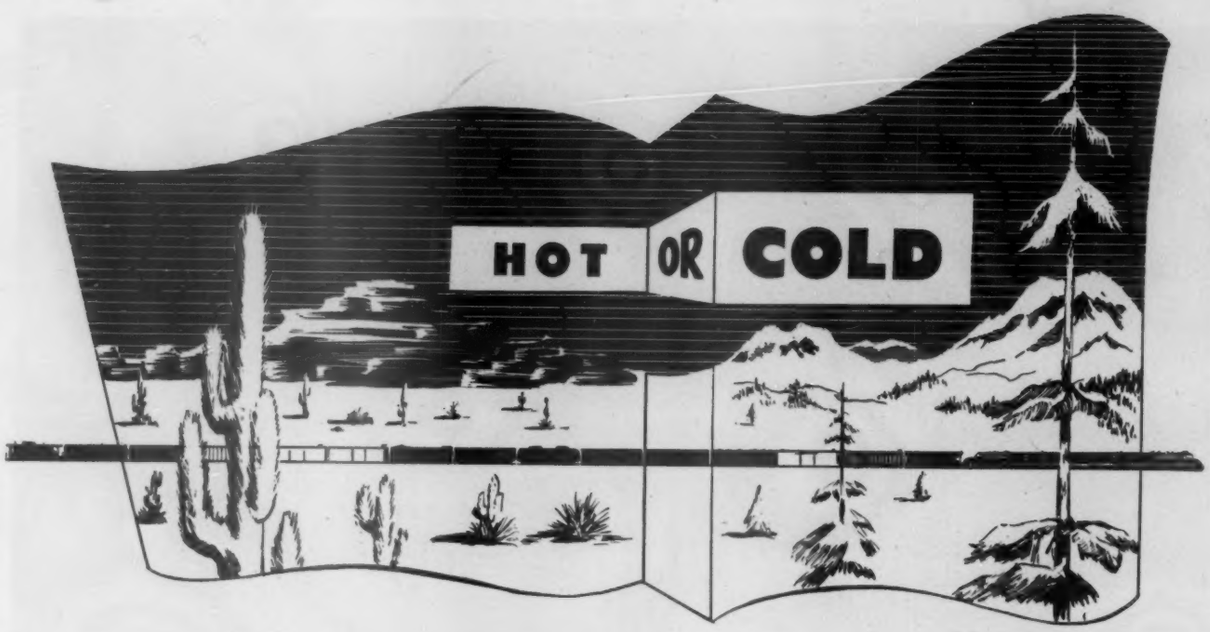
Wrap-on Pipe Insulation

Providing a means of insulating locomotive steam pipes, with their compound curves, radical bends, limited clearances and exposure to the weather—that is the job of Insutape. And, because it has done its job with lasting efficiency and economy, it has long been the recognized standard with locomotive builders and railroads from coast to coast.

UNARCO

UNION ASBESTOS & RUBBER COMPANY

332 SOUTH MICHIGAN AVENUE • CHICAGO 4, ILLINOIS



Streamlite HAIRINSUL *IS ALWAYS EFFICIENT!*

The valuable perishables which modern refrigerator cars carry are fully protected against sudden and extreme temperature changes by efficient Streamlite Hairinsul.

Leading refrigerator car builders have been specifying all-hair insulation for nearly half a century—and they find today that Streamlite Hairinsul, with its 40% less weight, is the most efficient and economical.

Streamlite Hairinsul assures you all the advantages given at the right—and more besides. Write for complete data.

1 LOW CONDUCTIVITY. Thoroughly washed and sterilized, all-hair heat barrier. Rated conductivity—.25 btu per square foot, per hour, per degree F., per inch thick.

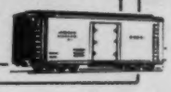
2 LIGHT WEIGHT. Advanced processing methods reduce weight of STREAMLITE HAIRINSUL by 40%.

3 PERMANENT. Does not disintegrate when wet, resists absorption. Will not shake down, is fire-resistant and odorless.

4 EASY TO INSTALL. Blankets may be applied to car wall in one piece, from sill to plate and from one side door to the other. Self-supporting in wall sections between fasteners.

5 COMPLETE RANGE. STREAMLITE HAIRINSUL is available ½" to 4" thick, up to 127" wide. Stitched on 5" or 10" centers between two layers of reinforced asphalt laminated paper. Other weights and facings are available.

6 HIGH SALVAGE VALUE. The all-hair content does not deteriorate with age; therefor has high salvage value. No other type of insulation offers a comparable saving.



Dept. H13, Merchandise Mart, Chicago 54, Ill.

The millions of wise travelers who go by rail enjoy *two* *outstanding* pleasures:

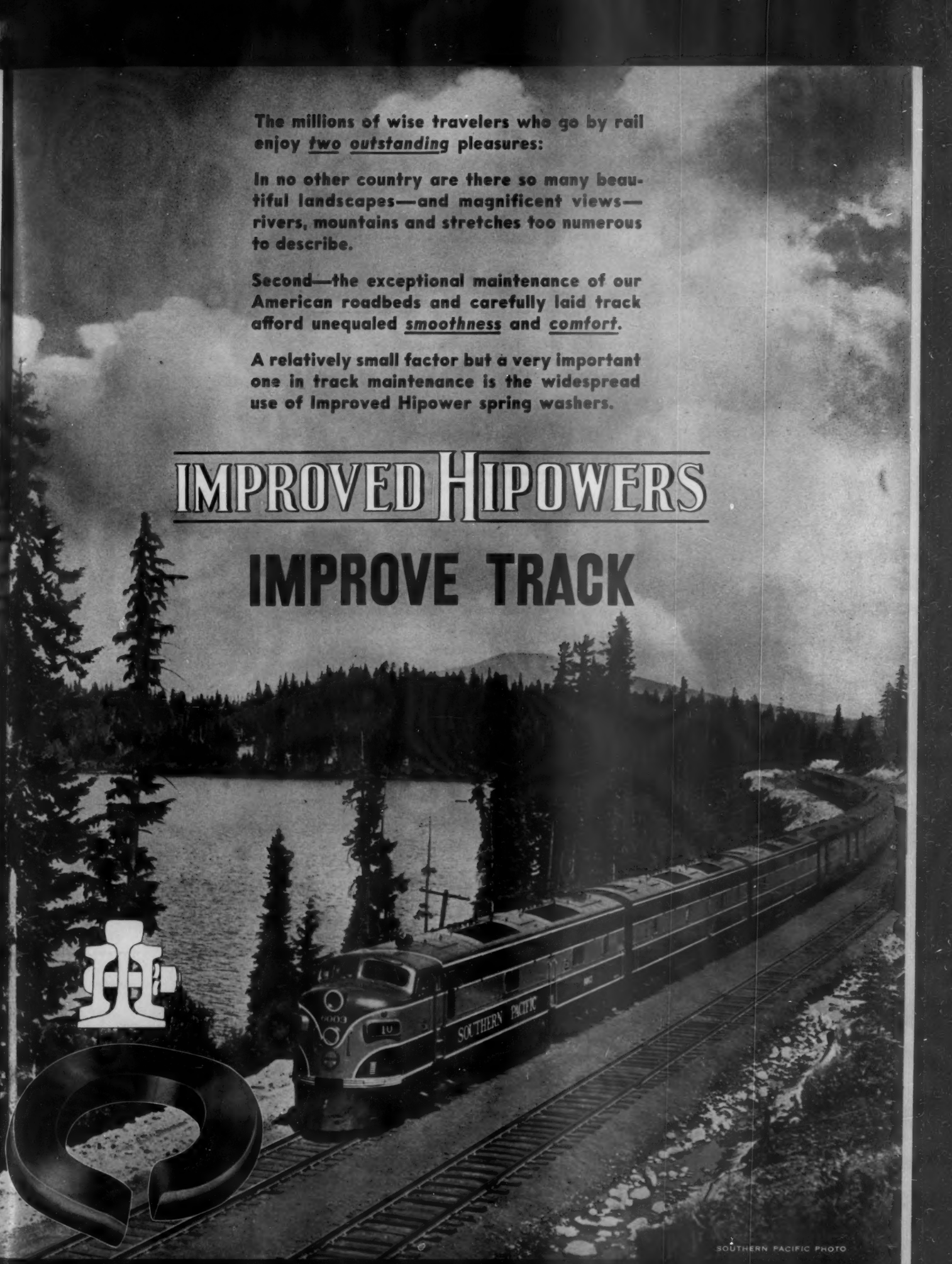
In no other country are there so many beautiful landscapes—and magnificent views—rivers, mountains and stretches too numerous to describe.

Second—the exceptional maintenance of our American roadbeds and carefully laid track afford unequaled *smoothness* and *comfort*.

A relatively small factor but a very important one in track maintenance is the widespread use of Improved Hipower spring washers.

IMPROVED HIPOWERS

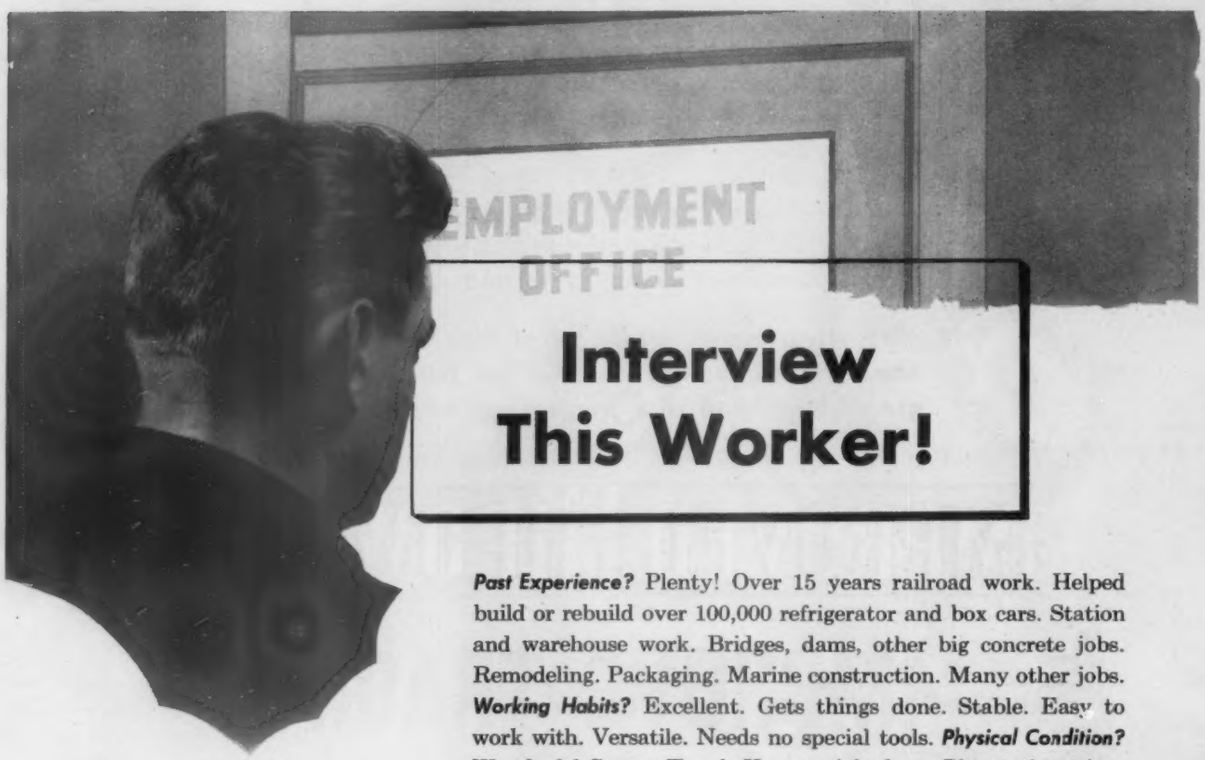
IMPROVE TRACK



SOUTHERN PACIFIC PHOTO

THE NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U. S. A.

A COMPLETE LINE OF RAILWAY SPRING WASHERS



Interview This Worker!

Past Experience? Plenty! Over 15 years railroad work. Helped build or rebuild over 100,000 refrigerator and box cars. Station and warehouse work. Bridges, dams, other big concrete jobs. Remodeling. Packaging. Marine construction. Many other jobs. ***Working Habits?*** Excellent. Gets things done. Stable. Easy to work with. Versatile. Needs no special tools. ***Physical Condition?*** Wonderful. Strong. Tough. Keeps weight down. Plenty of stamina. ***Recommendations?*** Ask Great Northern. Southern Pacific. Santa Fe. Pacific Fruit Express. Morrell Refrigerator Line. Many others furnished on request.

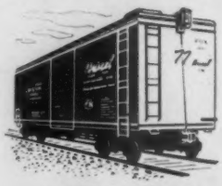
Put these Plywood Advantages To Work For You!

Douglas fir plywood is real wood in large, light, strong panels "performance-engineered" to bring you:

- ✓ **Great strength. Rigidity. Dimensional stability.**
- ✓ **A strength-weight ratio greater than steel.**
- ✓ **Split-proof, puncture-proof.**
- ✓ **Tremendous resistance to impact.**
- ✓ **Ease of handling. Workability. Versatility of application.**
- ✓ **Large panels; wide variety of sizes and thicknesses.**
- ✓ **Two types*: Waterproof-bond Exterior; moisture-resistant Interior. Several appearance grades within each type.**

*Two types: (1) 100% waterproof-bond EXTERIOR made for outdoor and marine uses; EXT-DFPA® grade-trademark is positive identification. (2) Moisture-resistant INTERIOR for uses not permanently exposed to water or weather. Within each type are several appearance grades to meet exact job needs. Produced and inspected in strict accord with rigid U. S. Commercial Standards.

Check These Railroad Jobs For Douglas Fir Plywood



CAR CONSTRUCTION

Siding and lining reefers; bunkers and bulkheads in reefers. Siding and lining box cars, work cars and other rolling stock. Underlayment for floor coverings, luggage racks and interior details in passenger cars.

BUILDING AND MAINTENANCE

Siding, interior paneling, movable partitions and cabinet work . . . subflooring, wall and roof sheathing. Station booths and counters. Signs and signal boards. Parts bins. Pallets. Track shims. Portable buildings.

CONCRETE FORM WORK

For stations, shops and maintenance buildings . . . bridges, aqueducts and other concrete jobs . . . re-usable plywood concrete form panels offer these advantages: smooth, fin-free concrete; time and labor savings through simplified form construction; low cost-per-use.

For complete plywood data, write (U.S.A. only) Douglas Fir Plywood Association, Tacoma Bldg., Tacoma 2, Wash. Field offices: 848 Daily News Bldg., Chicago 6; 1232 Shoreham Bldg., Washington 5, D. C.; 500 Fifth Ave., New York City 18.

Douglas Fir
Plywood

AMERICA'S BUSIEST BUILDING AND INDUSTRIAL MATERIAL

Believe it or not—
this is a
Dictating
Instrument!

And it's an
EDISON
first!

Thomas A Edison
INCORPORATED

EDISON PRESENTS

the smallest . . . lightest . . . simplest and most inexpensive Dictating Instrument ever invented!

IN ONE HISTORY-MAKING stride, Edison has advanced instrument dictation years ahead of anything ever before offered! The EDISON TELEVOICE System is an *entirely* new facility for handling your written communications—new in concept and scope—new in the instruments employed—new in the direct, simple, economical way it serves you!

Imagine a system of recording from many stations to a central point. Imagine that these EDISON TELEVOICE Stations are like your present telephone—as small and dependable—and as simple and familiar, so that no instruction is necessary! For the first time, you have no discs, cylinders, belts or index-slips to change or manipulate!

Consider that start, stop and playback, as well as length and correction indications, are all accomplished *by remote control* with simple push-buttons right on the TELEVOICE Station!

Now you can understand how profoundly Edison has transformed instrument dictation—turning it into an office necessity like the telephone and typewriter.

The EDISON TELEVOICE System, moreover, achieves an efficiency hitherto unapproached. One to twenty TELEVOICE Stations connect to the EDISON TELEVOICEWRITER, located at the *secretary's* desk. Hence, dictation is now "delivered" to her—instantly, clearly, continuously. It cannot sit, neglected, on some dictating instrument. Messenger pick-up service is eliminated. The secretary paces her transcribing to the work *as it is dictated,* and returns "the world's fastest signature service" without peaks or pressure.

TELEVOICE installations are made on a work-load basis to assure free-line service to all concerned. The economy is obvious. With many dictators served by *one* recording machine, costs of instrument dictation are cut by as much as 66⅔%!

Many low-cost, easy-to-use,

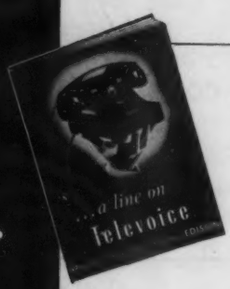
remote-control TELEVOICE Stations

connect to one single, central recording instrument—

the EDISON TELEVOICEWRITER

Edison TeleVoicewriter

The Televoice System



GET THE WHOLE STORY—NOW! Send for this new descriptive booklet. Or, to arrange for a demonstration, call "EDIPHONE" in your city. In Canada: Thomas A. Edison of Canada, Ltd., Toronto 1, Ontario.

EDISON, 56 Lakeside Avenue, West Orange, N. J.

Okay—send me A LINE ON TELEVOICE.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE ____ STATE ____

It's Here at Last!
A Diesel Book You Can Really Use
DIESEL-ELECTRIC LOCOMOTIVE HANDBOOK

By GEORGE F. McGOWAN, Technical Consultant

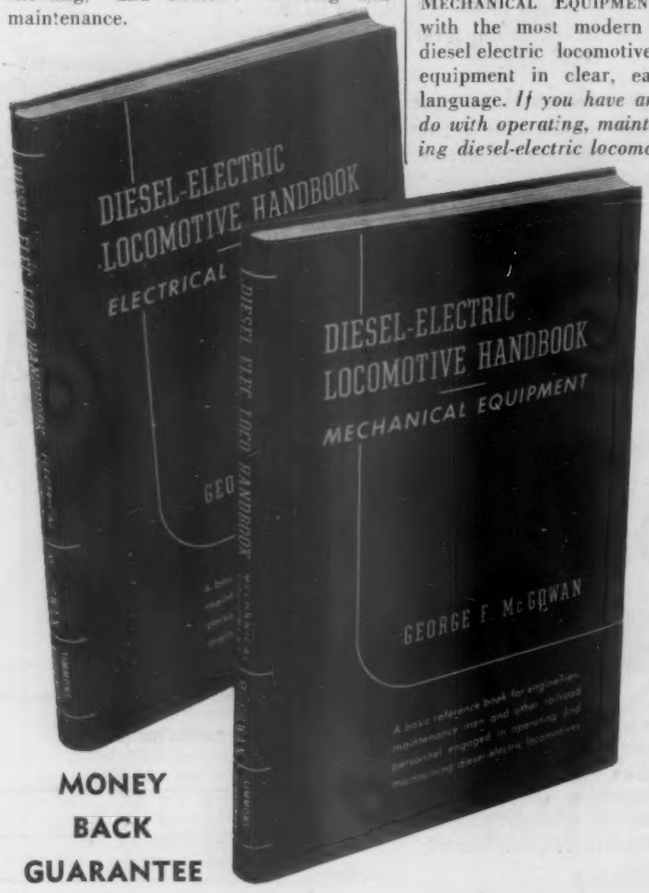
SEND TODAY for this great new book! Packed with photos and diagrams, it brings you up-to-the-minute facts—*the latest available* on diesel-electric locomotives and equipment.

Here is everything you need and want to know—*written from the viewpoints of the men in the cab and the shop*—by an experienced railroad man—*all checked and approved by the leading locomotive builders.*

For your convenience this handbook is sold separately in two volumes: *Mechanical Equipment* and *Electrical Equipment*. Read the descriptions that follow and you'll agree: *Here is essential information you cannot afford to be without!*

MECHANICAL EQUIPMENT

Everything necessary to complete understanding of diesel-electric locomotives is included—how diesel-electric locomotives are constructed, the reasons behind their design, proper operating methods, things that can go wrong with them, "trouble-shooting," and effective servicing and maintenance.



MONEY BACK GUARANTEE

GIVES YOU DETAILS OF EACH PART

Among the chapters are: The Development of the Diesel-Electric Locomotive; Fundamentals; Lubricating and Cooling; Fuel Systems—Fuel; Pistons, Piston Rings, Liners; Connecting Rods, Bearings, Crankshafts; Valves, Timing, Heads; Governors; The Steam Generator; The Air Compressor; and The Gas Turbine Locomotive.

DESCRIBES LOCOMOTIVES BY MAKE

Separate chapters are devoted to accounts of diesel engines made by The American Locomotive Company, Baldwin Locomotive Company, Electro-Motive Diesel, Fairbanks, Morse & Company, and Lima-Hamilton Corporation. Each engine, its parts, and its non-electrical auxiliaries are described and illustrated in full detail.

SOLVES JOB PROBLEMS FOR YOU

MECHANICAL EQUIPMENT provides you with the most modern information on diesel electric locomotives and auxiliary equipment in clear, easy-to-understand language. *If you have anything at all to do with operating, maintaining or servicing diesel-electric locomotives,* you'll use this book as a handbook to help you solve problems that you meet in your daily work, and as a reference to keep you on top of developments in this expanding field.

ELECTRICAL EQUIPMENT

You get full descriptions of all major pieces of electrical equipment and all their parts: how they are constructed, how to operate them, how to take care of them and how to fix them if they go wrong.

There are chapters on: The Electric Generator; The Traction Motor; Exciters, Auxiliary Generators, Motor Blowers, Dynamic Braking; Batteries; and Contactors.

DETAILS EQUIPMENT BY MAKE

The electrical and control equipment of the major builders: Alco-G.E., Electro-Motive Division, Lima-Westinghouse, Baldwin-Westinghouse, and Fairbanks, Morse-Westinghouse is completely analyzed in individual chapters.

You need only a layman's knowledge of electricity to gain the utmost benefit from this book—because the subject is presented *in practical language* by an experienced railroad engineer.

ANALYZES ELECTRICAL SET-UP

You learn why the electrical transmission has been adapted to the diesel locomotive; its advantages, disadvantages, and limitations. You get a review of electrical fundamentals; definitions of terms and explanations of how to use the most common electrical formulas. Schematic wiring diagrams are explained and their special symbols identified.

EXPLAINS OPERATION, SERVICING, MAINTENANCE

Yes, *here is your opportunity to gain a complete understanding of the electrical equipment of today's diesel-electric locomotives,* to learn how to handle, service and maintain the equipment.

GUARANTEED ORDER FORM

Simmons-Boardman Books
30 Church St., New York 7, N. Y.

Enclosed find ..... for the book(s) checked below. I understand that you will ship them to me postpaid, and that if I am not completely satisfied I may return them any time within 10 days of receipt for a full refund of my money.

☐ MECHANICAL EQUIPMENT, $4.95 ☐ ELECTRICAL EQUIPMENT, $4.95

COMBINATION OFFER—SAVE MONEY

☐ Both volumes above, *only $9.45*

Name .....

Street .....

City ..... State .....

3-19-51

BRIDGE MODERNIZATION AT CAIRO

SYMBOL OF ILLINOIS CENTRAL'S PROGRESSIVE SERVICE

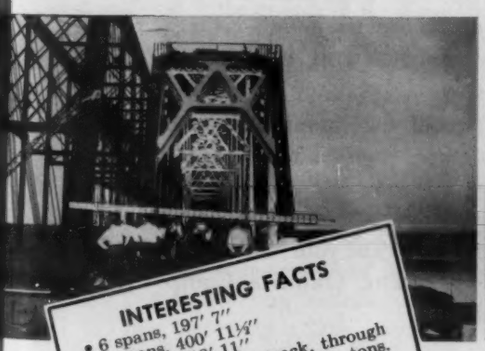
• This is the 100th anniversary of one of America's great railroads—the Illinois Central.

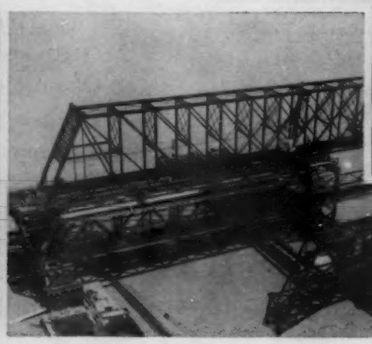
The year 1951 will also see the completion of a new steel superstructure for the Illinois Central's bridge over the Ohio River at Cairo, Illinois.

Twelve modern spans will replace a 61 year old, nine span structure, to accommodate today's heavier, faster traffic. American Bridge Company, because of its skill, know-how and wide experience, was the logical choice to perform the major construction feat of building the new superstructure on the original piers with a minimum interruption in traffic.

The first old span of the bridge was rolled off its piers onto temporary falsework and the new 518-foot, 1,700-ton span moved into position and opened to service after a traffic interruption of only 20 hours! Then the old span was launched like a ship into the river 100 feet below for easy removal.

While this is the first time this procedure has been used on a job of such magnitude, it is a typical example of the part American Bridge Company is playing to help our vital railroad systems meet the needs of growing America.





INTERESTING FACTS

- 6 spans, 197' 7"
- 4 spans, 400' 11½"
- 2 spans, 518' 11"
- Bridge was single track, through truss. Steel used, 10,000 tons.
- Erecting procedure: Illinois Central R. R. and American Bridge Company.
- Consulting Engineers: Modjeski and Masters.

FOOT BY FOOT the old span, 60-ft. high and weighing 1,100 tons, is rolled over to rest on launching sleds atop temporary falsework. From this position it was launched into the Ohio 100 ft. below. **LEFT:** Falsework span No. 2 erected complete and jacked to elevation prior to floating. FAR LEFT: New span rolls into position four hours after movement started.

AVAILABLE NOW! *For showing in churches, schools, clubs and industries, the new sound and color motion picture—BUILDING FOR THE NATIONS—a candid, factual photographic record in full color of the highlights of the fabrication and erection of the United Nations' Secretariat Building in New York City.*

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

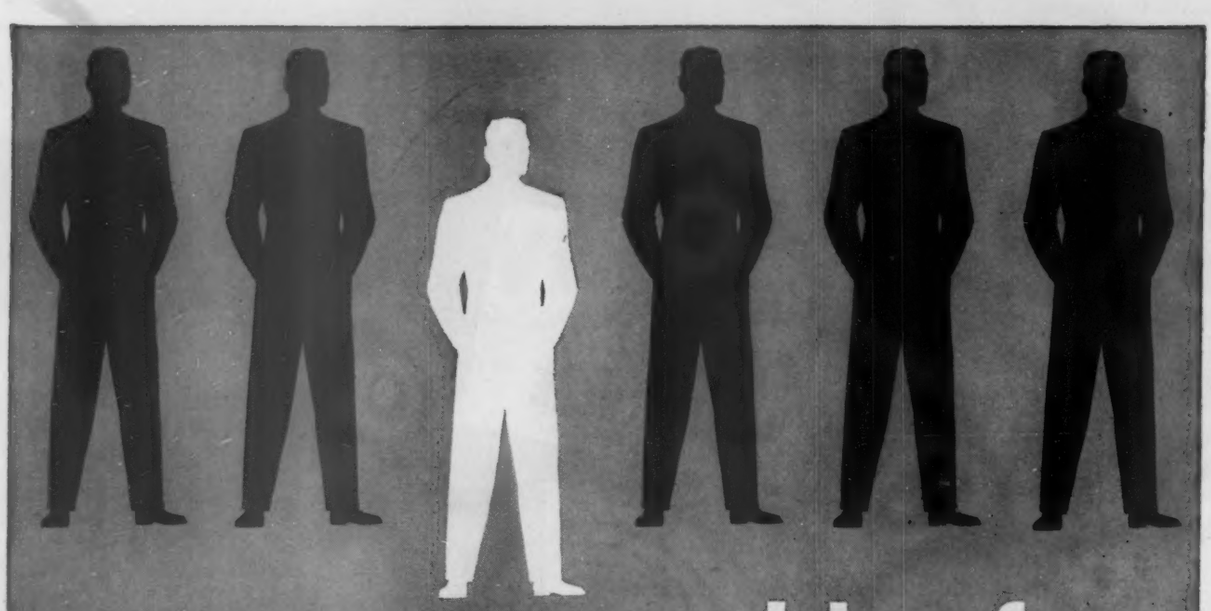
Contracting Offices in: AMBRIDGE • BALTIMORE • BOSTON • CHICAGO • CINCINNATI • CLEVELAND • DENVER • DETROIT • DULUTH • ELMIRA • GARY • MINNEAPOLIS NEW YORK • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • ST. LOUIS • SAN FRANCISCO • TRENTON

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

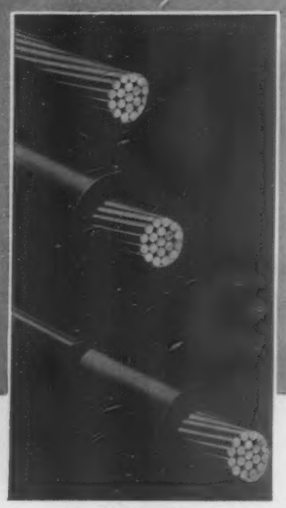
USS TRADE MARK

AMERICAN BRIDGE

UNITED STATES STEEL



we pay him for your protection



He's the one man out of every six at Okonite who is engaged in testing and inspection . . . a remarkably high ratio. In a sense, he's your inspector—for he's your assurance that the Okonite cable you buy is as nearly perfect electrically as can be made.

For example, in the manufacture of Okonite cables, here are a few specific instances of how these experienced testing and inspecting men protect your cable investment:

. . . Immediately after mixing, a sample of every individual batch of insulating compound is vulcanized and laboratory tested to check formulation and required characteristics, before any further processing takes place.

. . . A recently developed technique permits electrical testing of every foot of the insulating compound strips *before application* to the conductors. This is another unique advantage of the strip-insulating method, used in making all Okonite cables.

These are just two of the complete testing and inspection steps taken, that assure you the extra circuit protection and long life you expect when you buy Okonite cables. For detailed information on railroad cables, ask your Okonite representative, or write The Okonite Company, Passaic, N. J.

THE BEST CABLE IS YOUR BEST POLICY

OKONITE OKONITE SINCE 1878 ***insulated wires and cables***

A WISE FRIEND UTTERS A WORD OF CHEER—AND OF ADMONITION

Floyd W. Mundy, the senior statesman among railroad investment analysts, in a recent issue of his firm's (Jas. H. Oliphant & Co.) "Studies in Securities," has permitted himself to be rather more optimistic about the railroads' financial future than he has been for a long time. Specifically he writes, in part:

"My feeling is that the railroads are in a greatly improved position as a result of both tangible and intangible factors to meet whatever coming events will bring, and that a decidedly more favorable future may have dawned for this large segment of our corporate securities market."

Mr. Mundy does not develop enthusiasm for railroad investments easily, because no one has pointed out with more dogged persistence than he the pitiful lot which has befallen the owners of these securities in the past twenty or thirty years. Even in this most recent essay his readers are again reminded of railroad after railroad—and not reorganized companies either—whose aggregate stocks are selling today at a mere fraction of the cash originally paid into their treasuries by the purchasers of these securities, to say nothing of equities to which these shares should be entitled because of earnings reinvested in them since the first decade of the 1900's.

What symptoms does this veteran observer now detect to turn an outlook which was recently funereal into something a little less somber? For one thing, he discerns greater willingness on the part of regulatory authorities to recognize the public interest in a restoration of the railroads' credit. He cites the economies of dieselization, and the favorable position of many railroads in the taxation of so-called "excess" profits. He believes that increasing industrial production should give the railroads larger traffic volume without proportionate increases in capital outlays—that is, capital already invested ought to become more productive; and maybe the regulators are, for a change, going to let the owners share to some degree in this increased productivity of their property.

But Mr. Mundy sets limits to his optimism. He says, for example:

"Many investors in railroad securities must at times have wished that the government would take over the railroads, not when the earnings are all shot to pieces but when more favorable earnings are being enjoyed, these investors fearing that taxation, lower rates, subsidized competition, Social Security benefits, shorter hours, higher pay and pensions would finally result in almost certain extinction of profits. One will recall the transit situation in New York City. When the companies were under private ownership, the fares were kept at the same old nickel of the nineteenth century. After the city took over the transit lines and losses fell upon the taxpayers, the fares were soon increased."

He goes on to say:

"For a long time past, grossly misleading and false statements and part truths have been found in the propaganda of politicians, labor and other interests in respect of the railroads and these have not, it seems to me, been vigorously challenged and refuted by railroad management. It may well be that a more militant and aggressive campaign will come about as management more and more is led to the conclusion that it must act as stewards and trustees for the man who has his money invested in the railroads. Investors are not organized . . . and need champions to . . . protect their interests. It may be that the top executives will assume this role, in which case railroad securities would command a stronger position as investments."

This experienced analyst seems to be suggesting that the relative prosperity of the railroads at present may be short-lived unless railroad managers can contrive, while their prosperity lasts, to secure correction of the conditions which shrunk their earnings so sharply in the years following World War II. In gentlemanly language,

the implication appears to be that, unless these corrective measures are promptly and energetically pursued, then security-holders might not be too badly advised if they should seek to sell out to the government now, rather than wait until earnings are once again "shot to pieces." If we have taken undue liberties in reading between the lines in Mr. Mundy's message, we ask his forgiveness—but we do not believe we have done so.

He is very clear in his expression that the attractiveness of railroad securities as private investments hinges very largely on the aggressiveness and effectiveness of railroad managements in combatting and reversing, once and for all, the adverse political factors which have so sorely afflicted the industry—and which are only in apparent abeyance, as they were during World War II, because of the abnormal demand for transportation service, arising from military factors. Such a diagnosis, however politely expressed—from a source so responsible and so far to the "right," in principle, on the issue of nationalization—it would not be realistic to ignore.

LOOK WHO'S CALLING WHOM A "WARMONGER"

The people in the Kremlin have invaded and taken over practically all neighboring countries, and threaten all the rest of the world with the same treatment. The nations denouncing or opposing such conquest are castigated as "warmongers" and "imperialists."

In this country the manufacturers and operators of oversized, long-haul trucks and trailers have invaded the field of bulk transportation, and the nation's highways, with their road-busting lorries—either illegally overloaded, or, in many states, legal only by virtue of the fiat of legislatures which have paid more heed to big-truck lobbyists than to their own state highway departments. With a logic exactly paralleling that of the Kremlin characters, these road-busters level the "warmonger" accusation at the railroads and others who venture to suggest that their behemoths be banished from the rural roads or be trimmed down to size; or be required to pay for highway use in proportion to their ton-miles.

The latest instance of the invader's efforts to portray the victims of his forays as mischievous belligerents came last week in New York at a "press conference" where Vice-President Dodge of Mack Trucks, Inc., accused the railroads of waging "open warfare" against the trucking industry. That is plain misrepresentation—the railroads have evidenced no opposition in any way to the interests of the operators or manufacturers of local, farm or delivery trucks, who own and operate all but a minute fraction of the nation's truck fleet. The railroads' sole concern lies with the big combinations, operating in long-haul traffic; and their attitude toward these operators is certainly not one of "warfare." On the contrary, they merely ask that these big fellows be required to assume full roadway costs, including protection of the roadway against overloads—on exactly the same "user pays" basis under which the privately owned railways are forced to operate. They also ask that the long-haul trucks be regulated in the same way that the railroads are regulated.

Was it "warfare" against Soviet Russia when this nation insisted that Russia's atom bomb factories be subjected to the same U. N. inspection to which the U. S. and other Western countries were willing to submit? Of course, it was no such thing; and the railroads are not waging "warfare" on the long-haul trucks, either, when they ask that they submit to the same governmental restraints to which the railroads have already submitted. The only "warfare" that exists in the railroad-big truck controversy lies in the persistent refusal of the road-busters to bow to the judgment of competent and disinterested third parties—including the state highway authorities, the federal Public Roads Administration and independent engineering firms which have studied the problem. Like Stalin, they demand that they be the sole judges in any dispute where their interests are involved. We know of no railroad group which is insisting on any self-serving or *ex parte* limitation on truck operations or which would not be well content if limitations on truck size and weight, and road-use charges for large vehicles, were set at the levels recommended by *the predominant, expert, findings of competent third parties.*

It is true that Mr. Dodge says, "Let us have peace"—on his own terms. Mr. Stalin also says "Let us have peace"—on *his* own terms. But Mr. Stalin's price for peace is too high, and he will not get his brand of peace from the world unless he conquers it first. Mr. Dodge's peace terms are also too high—because highway finances would be bankrupt if the authorities were to try to keep road surfaces under trucks of the size the big operators would run if they had their way, at charges they would agree voluntarily to pay. If the railroads would acquiesce in the kind of "peace" Mr. Dodge offers them, they would be accepting rapid socialization for themselves at the first serious and protracted decline in traffic. Mr. Dodge and his camp would not relish the results of that catastrophe any more than the railroads would.

FOR SAFETY—REMOVE STEEL STRAPPING

Shippers and railroads find steel strapping a most useful tool. However, strapping can also be a dangerous weapon if loose ends of it come into contact with a man's body, particularly his face. Certainly no man—railroader or railroad patron—would like to feel that he caused another man anguish simply because he failed to remove

strapping from a car. Nevertheless, injuries from this cause are occurring.

Recently a man working for one of the railroads in the New York area was walking through a yard at night. As he passed one car with an open door, he was struck in the face by a protruding piece of steel strapping. The injury was, unfortunately, a serious one.

This is not the only such injury that has come to our attention. Since a lot of employees of shippers and railroads are subjected to this hazard, we don't think there should be any serious disagreement with the suggestion that people who make cars empty be especially requested, in the interest of safety, to take care to remove all steel strapping from them.

A REVISED PLAN FOR THE LONG ISLAND

Governor Dewey has backed away from the report of the three-man board he appointed to make recommendations for the future operation of the Long Island Rail Road. As will be recalled (see *Railway Age* of February 19, page 12), this board proposed to socialize the railroad under a so-called "authority," freeing it from all taxation, including unpaid back taxes and assessments; and to permit it to fix its own intrastate rates. The board also assumed that the "authority" would get title to the property without paying anything to the stockholders—and it hoped also to pay little or nothing to the bondholders.

In the legislation now supported by Governor Dewey, private ownership and management would get an opportunity to operate and rehabilitate the property, and only if it were unable to do so would public ownership be resorted to. To make the task of such private operation easier of successful accomplishment, it is proposed that all or at least a large part of the back taxes, and assessments for unremunerative improvements, now charged against the road, be cancelled; and that future property taxes be reduced to 40 per cent of those heretofore levied. Furthermore, the railroad would hereafter be authorized to establish its own intrastate rates for one year, before they could be attacked by the state Public Service Commission. In lieu of franchise taxes, the reorganized railroad would share 50-50 with the state its net earnings above 5 per cent on the common stock (after capital fund payments).

The present trustee, William H. Draper, Jr., has stated his belief that "the governor's plan, if enacted, would put the Long Island Rail Road back on its feet." Robert Moses, a member of the three-man board which proposed "authority" operation of the property, has dissented sharply. He is even opposing the increase of 20 per cent in commuter fares which the railroad is now seeking—although his board report admitted the need for an increase in some such amount—on the ground that the increase "at this time will simply raise the fictitious equity of the Pennsylvania [Railroad] and make the reorganization of the Long Island on a reasonable basis more difficult."

The New York Times favors the governor's proposals but is somewhat fearful of the "precedent" which would be set in tax and other concessions to the Long Island—lest such concessions might "put ideas into the minds of the directors of other railroads." To this paper's way of thinking, we sincerely trust that the Times' fears are justified. Nothing could serve a better purpose for the long-run constructive development of metropolitan areas than to put *all* their commuting services on a sound basis of respectable self-support, as Governor Dewey has proposed for the Long Island. In such an event these railroads would then be financially able and justified in developing these properties in measure to the public need for them, to the relief of the street traffic congestion which is now causing many big city areas to die slowly at the center.

THE "FREE" LAND

"In this year of the centennial of the Illinois Central Railroad, there is apt to be much interest shown by the public in the road's history. One question that may be asked of Illinois Central men and women is: 'How about all the free land your railroad got?'

"The Illinois Central came into being through a grant of federal lands to the state of Illinois, which in turn assigned approximately two-and-a-half-million acres to the railroad company. This grant of land, valuable as it was in getting the railroad started, was not an out-and-out gift. Over the years, in fact, it has proved to be a very good deal for both the federal and state governments.

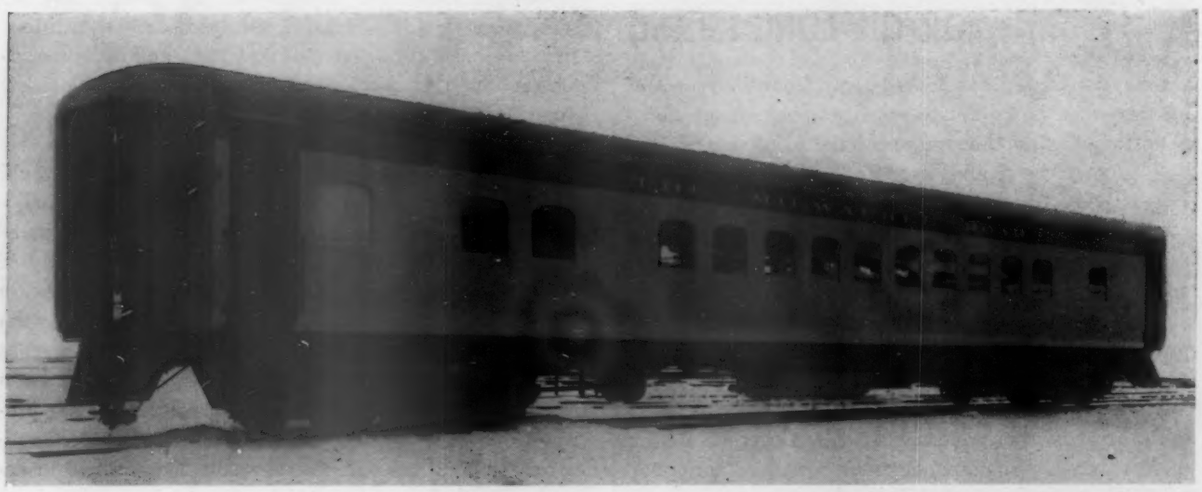
"The Illinois Central was built as a private company. The funds used to pay the bills for laying the 705-mile railroad across the unbroken prairie were private funds. In exchange for the land, the company agreed to pay into the state treasury 5 per cent of the railroad's gross operating revenues, plus a state tax that brought the total amount up to 7 per cent. In the century from 1851 to 1951 this tax has cost the Illinois Central approximately 135 million dollars. This amount is 48 million dollars more than the regular ad valorem taxes would have been.

"In addition to the charter line tax, the railroad agreed to carry government personnel and material at reduced rates. In all, the saving to the federal government over the regular commercial rates has amounted to about 25 million dollars. Fortunately, the Boren Bill of October 1, 1946, relieved the carriers of continuing these rate and fare reductions.

"Now for some simple arithmetic. The 2,595,000 acres of the original grant could have been bought for $1.25 an acre in 1851, or $3,243,750. In charter line taxes and in land grant reductions the use of these acres during the century has cost the Illinois Central $160,000,000. This is almost 50 times as much as their original cost. (The government, by the way, raised the price of its land from $1.25 to $2.50 an acre after the railroad was started, and soon sold its land at the double price.)

"In other words, there were strings attached to the land grants, and these strings have pulled in a handsome profit to the state and federal governments."—*W. A. Johnston, president, Illinois Central.*

1 Weight trends—1927. Aluminum-alloy suburban car. Length, 81 ft.; weight, 98,300 lb.



2 Weight trends—1934. All-welded steel coach. Length, 80 ft. 8 in.; weight, 96,000 lb.

Passenger-Car Weights And Energy Consumption

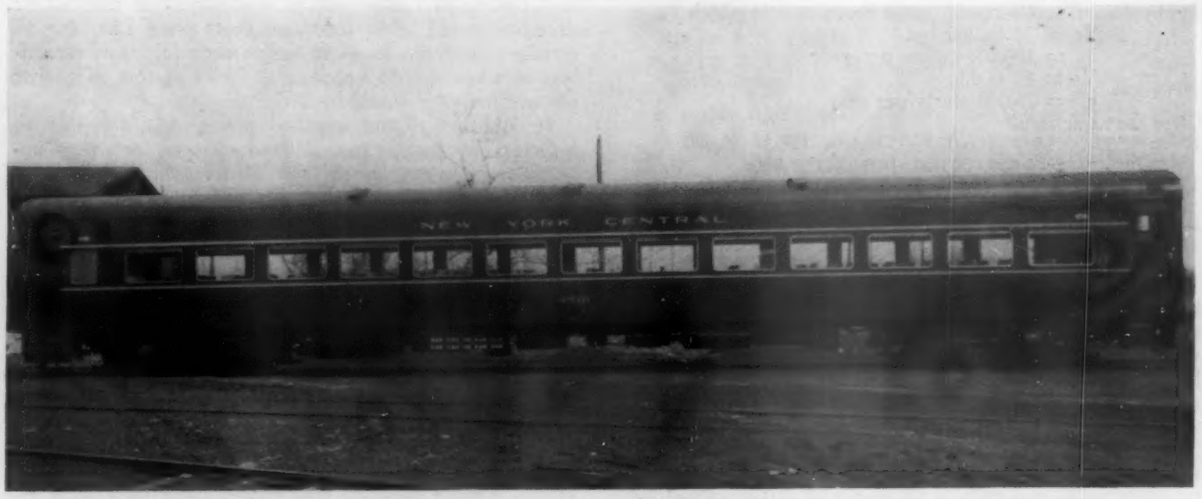
By L. E. BLUE
Project Engineer
Pullman-Standard Car Manufacturing Company

A discussion of possible tangible operating savings if weight could be saved without increased vehicle cost

The relative importance of weight reduction in railway rolling stock is a subject about which there is considerable variety of opinion and the significance of which it is believed is underestimated. There hardly can be any doubt that it does cost something to transport every superfluous ton over the railroads, but how much more is a question to which it is difficult to give an exact answer. However, by rather simple arithmetic it can be shown that it may cost as much as $236 per year per ton to haul this extra weight in suburban passenger service and it can conceivably be much higher.

There are intangible factors such as reduction in maintenance of roadway and equipment that are impossible to determine, and there is a possibility of reducing the cost of rolling stock. If the weight reduc-

3 Weight trends—1936. Stainless-steel coach. Length, 79 ft. 8 in.; weight, 83,530 lb.



4 Weight trends—1950. Multiple-unit suburban car of all-welded high-tensile, low-alloy steel. Length, 85 ft.; weight with motor equipment, 150,000 lb.

5 Weight trends—1950. Coach of low-alloy high-tensile steel. Length, 85 ft.; weight, 135,600 lb.

DEVELOPMENT OF FORMULA FOR ENERGY CONSUMPTION

The total energy consumed at the rail to transport and accelerate a ton weight for one year is expressed by the formula

$E = TrM + \frac{1}{2}\ mV^2n$, in which

- Tr = train resistance in pounds per ton
- M = annual mileage
- m = mass of 1 ton
- V = average top speed
- n = number of starts (or stops) per year

To express this energy in terms of foot-pounds it is necessary to apply the following constants and conversion factors

$E\ (ft.\text{-}lb.) = 5{,}280\ TrM + 1.1 \text{ times } \frac{2{,}000\ (1.467V)^2n}{2 \times 32.2}$,

in which

- 5,280 is feet per mile
- 1.1 is the factor required to take into account the kinetic energy of rotation of wheels and axles as well as the kinetic energy of translation
- 32.2 is the factor for conversion to mass
- 1.467 is the factor for conversion from miles per hour to feet per second

Simplified, the formula becomes

$E\ (ft.\text{-}lb.) = 5{,}280\ TrM + 73.4\ V^2n$

Application of this formula in the above case in which

- Tr = 13 lb. per ton
- M = 100,000 miles per year
- V = 42 m.p.h.
- n = 25,000 starts per year

Gives the same result

$E = 5280 \times 13 \times 100{,}000 + 73.4 \times 42^2 \times 25{,}000$

$= 6{,}864{,}000{,}000 + 3{,}234{,}000{,}000$

$= 10{,}098{,}000{,}000$ ft. - lb.

tion is accomplished primarily through improved design rather than by substitution of expensive lightweight metals, the investment in rolling stock could be lessened by an amount equal at least to $2,000 per ton as passenger rolling stock generally costs a dollar per pound or more.

To arrive at the cost of $236 per ton per year, it is necessary to make certain assumptions which are believed conservative. A car or train in active suburban service will travel at least 100,000 miles per year. The train resistance, or force required to move the car against its own frictional resistance and windage, varies with both speed and total train weight over a wide range. It may be anything from 3 to 35 lb. per ton on level tangent track.

Overcoming Grade Resistance

In addition there is the force required to overcome grade resistance, which is 20 lb. per ton for each one per cent of grade, and the force required to overcome curve resistance, which is about 0.8 lb. per ton for each degree of curvature.

While the topography of any railroad will vary so much that it is difficult to select a true average, 13 lb. per ton was arbitrarily chosen as being conservative for the total train resistance, including all of the above factors. On this basis, the yearly total energy in foot-pounds consumed at the rail will be

13 × 5,280 ft. per mile × 100,000 miles = 6,864,000,000 ft.-lb.

In addition to the energy consumption just to keep the train moving at some average speed, energy is required to accelerate the train from rest up to this average speed. The force required to accelerate one ton at the rate of one mile per hour per second is 100 lb. This calculation could be made using the formula $\frac{1}{2}\ MV^2$, as shown in the table. However, it does not take into account the rotative inertia of wheels and axles, unless a correction factor is used, and gives a result which is slightly too low; therefore, a more laborious method is used.

The important point to observe is that this amount of energy is ultimately dependent only on top speed and not on rates of acceleration. The assumption made in this case is that the average acceleration is 0.7 m.p.h. per sec. which will require 70 lb. per ton. The train is accelerated to 42 m.p.h., which will require 60 sec. during which time the train will have traveled 1,848 ft. If the stops average four miles apart, the train will have made 25,000 starts and stops in one year. The total energy in foot-pounds required to get the train under way will be

70 × 1,848 ft. × 25,000 = 3,234,000,000 ft.-lb.

The total energy required at the rail to move the train and to accelerate it to a given speed is 10,098,000,000 ft.-lb. Since the kilowatt-hour is perhaps the most generally understood unit of energy, this figure is converted to kilowatt-hours by dividing by 2,655,000. The total energy becomes 3,800 kw.hr. (This is equivalent to 5,100 hp.hr.) The cost of this energy at the rail or drawbar would be at least two cents per kw.hr. due to certain conversion losses in the power equipment regardless of what type it happens to be. The cost of power per ton per year would be $76.

In addition to the so-called power cost, there is an indirect cost in the annual fixed charges for every unnecessary ton weight of car structure or equipment. Even if it is assumed that this weight cost only $0.80 per pound, instead of $1.00, the total cost of each superfluous ton is $1,600. At 10 per cent for all fixed charges, including interest, the charge for this item is $160 per year. Together with the $76 power cost, the total burden for transporting a ton in this case is $236 per year.

Many Variables

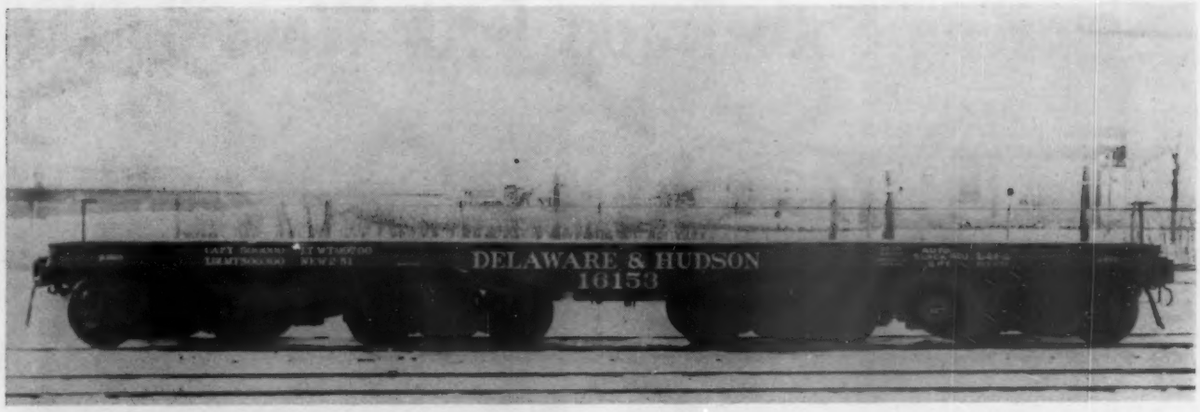
There are so many variables entering into the problem that each case should be calculated insofar as possible for the actual conditions of the operation in order to obtain a more accurate cost figure. Even then some assumptions have to be made, but the result obtained in most cases will show that the cost of hauling unnecessary weight is quite a significant amount. If a weight reduction of 10 per cent is effected, 11 per cent more can be paid for each existing pound without increasing the overall initial cost.

If weight is reduced 20 per cent, an additional 25 per cent per pound can be paid.

Such reductions in weight should be possible with carefully considered designs without increasing the initial cost more than 10 or 15 per cent per pound. It will also enable the same locomotive to haul longer trains with the same performance it gave with heavy equipment, or to give greater acceleration and higher schedule speed with the same number of lightweight cars. The advantages are manifold with the results becoming accumulatively beneficial in effect.

As a check on the power cost of $76 per ton per year, it is interesting to compare with the reported cost of fuel for operation of an actual three-car motor train in local suburban service. The fuel cost for this train, weighing 183 tons, was 16.5 cents per mile. On a basis of 100,000 miles for one year, the cost per ton per year would be

$$\frac{16.5 \text{ cents} \times 100{,}000}{183} = \$90$$



Cast-steel flat car with a load limit of over 250 tons

Flat Car for 250-Ton Loads

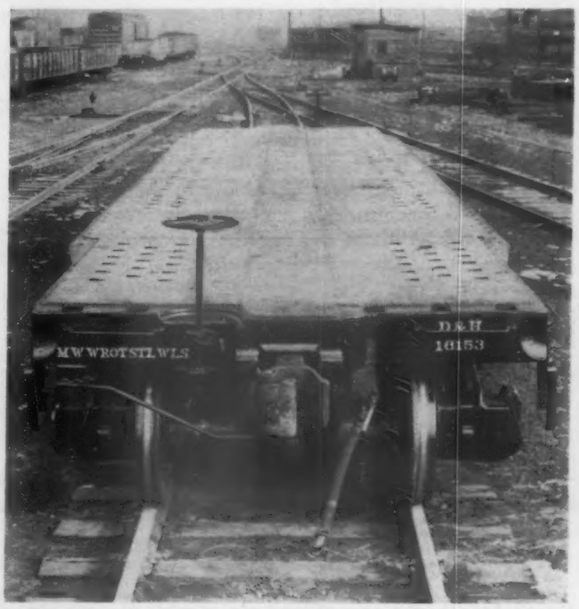
Delaware & Hudson flat car No. 16135, recently assembled at that road's shops at Oneonta, N. Y., is designed to handle single loads weighing upwards of 400,000 lb. It is almost identical to one built simultaneously for the New York Central by Merchants Despatch at East Rochester, N. Y. In each case the flat-car body comprises a one-piece cast-steel frame of low-carbon nickel-steel with a ½-in. Cor-Ten steel floor secured to the top of the casting by a continuous weld. Through the top floor plate slots and holes are provided for securing the loads. Slots are designed for the use of T-head bolts. The holes are 1¼-in. in diameter and are arranged in a row along each side of the floor. The length of the frame over striking plates is 45 ft. 4 in. The width of the car for 30 ft. at the center is 10 ft. and for 4 ft. 2 in. at each end, 9 ft., with 3-ft. taper connections between the two widths. The height from rail to top of floor is 4 ft. ½ in. The underframe with floor plates intact was supplied by the General Steel Castings Corporation.

There are four eight-wheel trucks under each car. The two trucks under each end are connected with span bolsters. The wheel base of the trucks is 5 ft. 6 in. and the span bolsters between truck centers are 11 ft. long. The four axles at each end are thus equally spaced. The span-bolster center plates are spaced 24 ft. 6 in. The side frames, truck bolsters, and span bolsters are of high-tensile steel. The multiple-wear wrought-steel wheels are 33 in. diameter and the journals 7 in. by 14 in. Each nest of bolster springs has four double coils with 1-⅝ in. travel and two Simplex snubbers.

There are two 12-in. AB air-brake equipments. The reservoirs and brake valves are mounted under the middle of the car floor and each equipment operates the brakes on the trucks at one end of the car. On the D. & H. car are two Westinghouse automatic slack adjusters, one for each end. One of the principal differences in the D. & H. and N.Y.C. cars is the hand-brake equipment. The N.Y.C. car has a hand brake at one end only. On the D. & H. car Equipco high-powered A.A.R. certified brakes with drop shafts are installed at each end.

Included in the equipment of the D. & H. car are Miner A-22XL draft gears, American Steel Foundries couplers with 6¼-in. by 8-in. swivel shanks, Imperial rotary release rigging, Magnus bearings, National Malleable journal-box lids, Jenkins leather fiber dust guards with Cenco dust-guard retainers, Davis No. 13 brake beams, Schaefer loop type brake hangers, Illinois Railway Equipment brake-hanger retainers and keys, and Chicago Railway Equipment single-type brake-beam safety guards.

The D. & H. car has a light weight of 99,700 lb. and a load limit of 500,300 lb. The N.Y.C. car is 1,000 lb. lighter and, therefore, has a load limit 1,000 lb. higher than the D. & H. car.



In the top of the flat car are T-slots and tie-down bolt holes

Signaling Both Tracks Both Ways on the

Centralized traffic control includes junctions and crossover layouts on 11 miles of double track, including heavy grades and tunnels—Protection for men on motor cars

Westbound train at west end of the crossovers near Milepost 378

Centralized traffic control has recently been installed by the Norfolk & Western on 11 miles of double-track main line between Bluestone, W. Va., and Powhatan. This project includes power switches at two junctions with branch lines, one center siding, and crossovers between main tracks, as shown in the accompanying plan. The signaling is arranged for train movements in both directions on both tracks, so that faster trains can be run around slower ones, thereby increasing the track capacity.

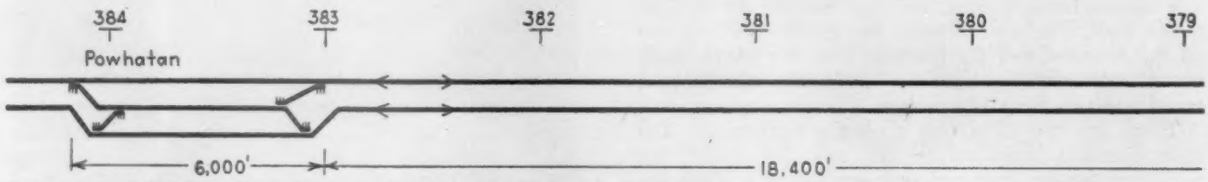
At Bluestone, the east end of the project, the grade starts to ascend westward, at rates varying between 0.5 and 1.1 per cent for approximately 8,000 ft. to Milepost 375, then descending at varying rates of 0.38 to 1.78 per cent for about 9 miles. On these grades trains of necessity are operated at slower speeds and, therefore, occupy sections of track for longer periods than on adjacent sections where speeds are higher. In order to increase the track capacity, the new track arrangements, power switches, signals and C.T.C. were planned to provide the equivalent of two parallel, single, main tracks, on both of which trains can be operated in either direction by signal indication. The power crossovers are located so that, when a slower train is moving through the territory, a faster train can be crossed over to the other track to run around it. This plan of operation keeps all trains moving, rather than delaying the slower ones on sidings or holding them in a yard.

Two crossovers, one for each direction, are included in the layout at Bluestone, as shown on the plan. This track layout, which also includes two junctions with branch lines, was formerly a separate interlocking controlled locally at Bluestone. In the new project, all the switches, crossovers and signals in this area are included in the new C.T.C. system. A new set of two power crossovers, one for each direction, was installed just west of Milepost 378. Power switch machines previously installed at both ends of the center siding, extending between Milepost 383 and Powhatan, were incorporated in the C.T.C. system.

Signaling at Tunnel

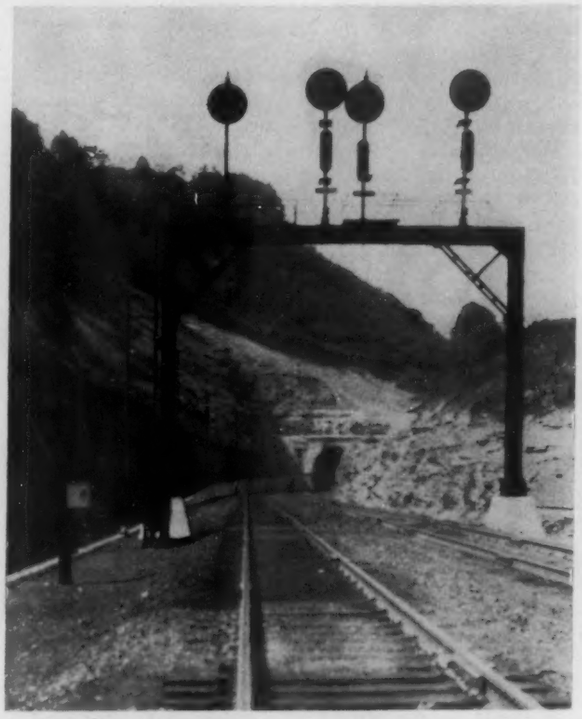
In this territory, there are two double-track tunnels. The Elkhorn tunnel, which is the longest, is 7,110 ft. long. The new installation includes absolute signals on both tracks at each end of Elkhorn tunnel to authorize trains to enter the tunnel. Special arrangements are provided for operation of motor cars and maintenance-of-way equipment through this tunnel, as well as the protection of maintenance-of-way employees, as will be explained later.

The signals on this installation are the position-light type. The switches are operated by dual-control electropneumatic machines, except at Bluestone where the exist-



Track plan of C.T.C. territory between Powhatan and Bluestone showing signals at only the two ends of the tunnel. The signals at the power switch layouts are standard arrangements and are not shown on this plan

Norfolk & Western



Home signals at east end of tunnel with special telephone box on post at left

Phone box near end of tunnel includes toggle switch and 2-in. red lens

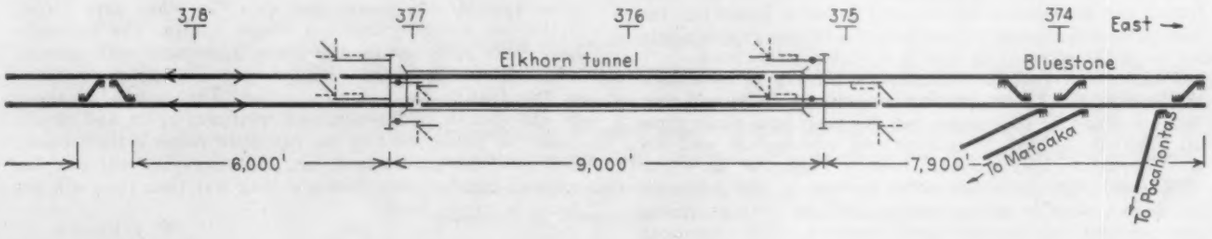
ing 110-volt a.c. electric switch machines were retained. Track circuits are the a.c. coded type, using 75 code to control the Approach aspect, 120 to control the Approach-Medium, and 180 to control the Clear. The control machine for this C.T.C. is located in the dispatcher's office. On this machine, 7 levers control crossovers, 6 levers control single switches, and 9 levers control 32 signals. Conventional 504-C type line code equipment, operating on two line wires, is used to transmit control codes to the field stations and to return the indication codes to the control machine.

Tunnel Fans

On this railroad all trains are operated by coal-burning steam locomotives. In the 7,100-ft. tunnel, the track is on a one per cent descending grade westward. Because of this grade, and the prevailing winds, the draft is usually from west to east in the tunnel. Electrically operated ventilating fans are located at the west end of the tunnel to aid the natural draft to blow smoke eastward out of the tunnel. The operation of these fans is controlled by line code equipment from thumb type levers located in the bottom row on the dispatcher's C.T.C. machine.

Protection for Motor Cars

This installation includes special protection for maintenance-of-way employees and for the movement of track motor cars through the tunnel. Near each end of the tunnel, there is a sheet-metal telephone box mounted on a pole. An illustration shows one of these boxes. By means of a double-throw, double-pole knife switch at the



upper section of the panel, this telephone can be connected to either the block circuit or the dispatcher's telephone circuit. The press-to-talk button is just below the switch.

In the lower part of the telephone box, there is a special panel with a 2-in. red lens and an enclosed toggle switch at the left. When an employee is ready to run a motor car through the tunnel, he stops at the telephone box for that track. He calls the dispatcher to determine whether the motor car move can be made and, if so, the man at the box throws the toggle switch which is to the left of the red lamp. When this action is indicated by a lamp on the dispatcher's panel, the dispatcher operates the corresponding thumb lever at the bottom of the panel. This prevents clearing the signals which govern train movements into the tunnel on that track. At the tunnel, the controls check track occupancy of the track in the tunnel, then a lamp is lighted behind the red lens in the telephone box. This indication authorizes movement of the motor car through the tunnel on that track.

After a motor car reaches the other end of the tunnel, the employee must go to the telephone box for that track and throw the toggle switch, which indicates to the dispatcher that the car is out of the tunnel, and also releases certain local circuits, enabling the dispatcher to clear the signals for a train, or to give a lineup for another motor car move through the tunnel on that track,.

When maintenance-of-way work is to be performed, protection is secured by consulting the dispatcher and operating the protective devices described above. In addition, a single-pole switch mounted in a separate housing immediately below the telephone may be opened and this special housing then locked by means of a private lock. In this manner, the protection is effective until released by the employee originally securing it.

This is mountainous territory with high rock cliffs along the track at many places. Therefore, within a distance of 6 miles, 12 rock slide fences, totalling about 7,000 lin. ft., were installed as part of the new signaling project. The posts for these fences are made of old 130-lb. steel rails, and are as high as may be necessary at different locations. At some places, where there are over hanging rocks, the upper portions of rail posts are bent out at an angle to detect rocks that may fall vertically from bluffs. Standard woven-wire stock fencing extends from each end post to a location near the center, the ends of the fencing being tied around sections of 1½-in. pipe. At the posts, the wire is held loosely in loops. At the far ends the pipes are held by adjustment bolts. At the center, the pipes are under tension by coil springs to hold the fencing taut. From the pipe for each fence section, a small wire cable extends to a trigger mechanism. At the center location there is a circuit controller which is normally held in the closed position by a trigger which is tripped when a rock strikes any section of the fence. One such controller arrangement will serve all the fence built to any height, and will serve as much as 225 lin. ft. of such fence in each direction from the center location.

When the controller operates, the circuits are opened to set the signals at their most restrictive aspect. When a train arrives and stops at the signal, a member of the crew walks to the slide location to determine the damage and to telephone to the dispatcher. The trainman can see that the controller trigger is tripped. The N. & W. now has more than 135 of these rock slide fences in service, totalling more than 340,133 lin. ft.

This centralized traffic control installation was planned and constructed by railroad forces under the direction of J. A. Beoddy, superintendent telephone and signals.

Communications . . .

Finds Us Too Easy on Striking Trainmen

NEW YORK

TO THE EDITOR:

Your editorial of February 26 captioned "Harsh Words from Mr. Pegler" seems to me as completely missing the boat.

In the first place it suggests that the trainmen who became suddenly "sick" are nincompoops ready and willing to follow a leader be he a conservative or wild man. I totally disagree with such characterizations because it is well known that trainmen on our railroads possess better than average intelligence. Such being the case their "strike" is rendered all the more reprehensible. We are at war with Russia and her satellite nations, and no one is fooled into believing we are not and any worker who refuses to contribute his all to the common defense is a traitor in my book.

I agree with you that Congress is lagging in its obligation to America by not putting teeth in the Railway Labor Act but that's for the future, not the past. In the meantime all brickbats leveled at un-American workers are well deserved whether they emanate from a Pegler or an editor of *Railway Age*. Let's not soften too much, Mr. Editor, if we do not want to incite another spell of sickness among our workers in business and industry. The American people are all fed up on any such bankrupt thinking that seeks to soften the blow after it has laid us low.

E. W. BURKE

[We still do not believe it makes sense to shoot men as a disciplinary measure when milder steps have demonstrated that they would accomplish the same purpose, perhaps even more effectively.—EDITOR]

Reparations Cases Costly to Taxpayers

SALT LAKE CITY, UTAH

TO THE EDITOR:

If the huge reparations requested by the Justice Department are O.K.'d by a short-sighted Supreme Court in the case of alleged excess rates in World War II then the only recourse is to American public opinion. If a judge rules against one person and then the other says forget it the one ruled against can forget it also. The railroads have been reluctant to enter into agreement with government as to rates on this present emergency because of the Justice Department's action. The railroads cannot be expected to go through such treatment again and should make the public see that the railroads' cause is their cause, and that the government, i.e., the taxpayer, will pay far more in regular rates during a long war than they will get back in these fines.

W. J. KIEFER

H. S. Loeffler
President, A.R.E.A.

A. R. E. A.

Convention

SECTION

contents

Condensed for rapid reading, an account of the fiftieth annual meeting of the American Railway Engineering Association, held at the Palmer House, Chicago, March 13-15, appears on the following pages. Included are a highlight story describing the principal events of the meeting, brief abstracts of all the technical committee reports, indicating the action taken on the recommendations contained in them, and condensed abstracts of most of the addresses, including those presented in connection with the various committee reports.

Mobilization-Minded

T. A. Blair (above), president-elect; C. J. Geyer (right), vice-president; C. G. Grove (far right), vice-president-elect

While carrying on their studies of the routines involved in the maintenance and construction of the fixed properties, railway engineers are keenly alert to their responsibilities in helping to assure that the railroads will "come through" in fulfilling their obligation in the present emergency. At the same time these engineers are sponsoring an amazingly comprehensive program of research aimed at turning up better devices, materials and methods to insure maximum efficiency in the maintenance of the tracks and structures. These facts stood out in bold relief at the fiftieth annual meeting of the American Railway Engineering Association, which was held at the Palmer House, Chicago, March 13-15.

The principal business of the meeting was the presentation and consideration of reports of the association's technical committees. These now include 21 standing committees, while in addition this year the new special Committee on Continuous Rail presented its first report. Altogether, reports were submitted on more than 100 individual subjects, and many of them included recommendations calling for changes in, additions to, or deletions from the association's Manual of recommended practice. Many of the committee reports were supplemented by one or more brief addresses on timely subjects pertinent to the work of the committees.

Events at Opening Session

An unusual number of addresses were presented at the opening session on Tuesday morning, March 13. The speakers included H. S. Loeffler, president of the A.R.E.A., and assistant chief engineer of the Great Northern; J. H. Aydelott, vice-president, Operations and Maintenance department, Association of American Railroads, who spoke on "A War Economy—Will It Leave the Railroads Unscathed?"; P. T. Trax, assistant supervisor of track of the Pennsylvania, whose subject was "The A.R.E.A. from the Viewpoint of a Junior Member"; and G. M. Magee, research engineer, Engineering Division, A.A.R., who spoke on "Highlights in Engineering Research."

Also at the opening session greetings from the A.A.R. Signal Section were heard from its chairman, D. W. Fuller, signal engineer of the Atchison, Topeka & Santa Fe, and from the Electrical Section, through its chairman, H. F. Finnemore, chief electrical engineer of the Canadian National.

Still another feature of the opening session was the presentation of an honorary membership in the A.R.E.A. to John E. Armstrong, chief engineer of the Canadian Pacific and a past-president of the association. As part of this presentation Mr. Armstrong's career and accomplishments were reviewed by H. R. Clarke, chief engineer of the Burlington lines. In the absence of Mr. Armstrong the honorary membership certificate was accepted by his son, John E. Armstrong, Jr., assistant district engineer of the C.P.R.

Presenting his first annual report as secretary of the association, Neal D. Howard first pointed to the increase in membership that occurred during the past year (for details see following abstract of President Loeffler's address), and then noted that a special development with respect to membership during the year was the increasing number of members entering the military service of the country. "In view of this development," he said, "the Board of Direction reactivated its World War II rules with respect to members in military service, under which such members are relieved of all dues payments for the period of their service, while at the same time they are assured of receiving all of the publications of the association, either currently at a given address, or upon their return to civilian status."

In a discussion of the work of the committees, Mr. Howard noted that five emergency committees had been

Engineers Meet at Chicago

Numerous addresses on timely subjects and reports of 22 technical committees are heard at fiftieth annual convention of the A.R.E.A.—Research in spotlight as way to solve maintenance problems

N. D. Howard
secretary

appointed "to review the emergency provisions and specifications adopted by the association during World War II, in the light of the new mobilization effort of the country," and that the "labor and materials conservation" assignment which the standing committees had carried during the last war had been reassigned to them. Another point brought out by Mr. Howard is that the appropriation ($354,770) that the A.A.R. has made for carrying out the Engineering Division research program for 1951 includes an item of $7,200 to cover the publication of research reports in A.R.E.A. Bulletins and Proceedings. Heretofore, he said, these reports have been published at A.R.E.A. expense.

On of the outstanding events of the meeting was the annual luncheon held Wednesday noon, at which the principal speaker was John M. Budd, vice-president, operations, of the Great Northern, whose subject was "American Railroads at Mid-Century."

All sessions of the convention were presided over by President Loeffler, assisted by Secretary Howard and Vice-President T. A. Blair, chief engineer system, Atchison, Topeka & Santa Fe. The attendance at the convention included 1,024 members and 683 guests, a total of 1,707.

Election of Officers

The following officers were elected to direct the affairs of the association during the ensuing year: President, Mr. Blair; vice-president to serve for two years, C. G. Grove, chief engineer maintenance of way, Western region, Pennsylvania, Chicago.

The directors named were: W. C. Perkins, chief engineer, Union Pacific, Omaha, Neb.; R. J. Gammie, chief engineer, Texas & Pacific, Dallas, Tex.; L. L. Adams, assistant chief engineer, Louisville & Nashville, Louisville, Ky.; and A. N. Laird, chief engineer, Grand Trunk Western, Detroit, Mich. Members of the nominating committee are: L. H. Powell, chief engineer, Atchison, Topeka & Santa Fe, coast lines, Los Angeles, Cal.; L. H. Laffoley, engineer of buildings, Canadian Pacific, Montreal, Que.; H. E. Kirby, cost engineer, Chesapeake & Ohio, Richmond, Va.; W. G. Powrie, chief engineer, Chicago, Milwaukee, St. Paul & Pacific, Chicago; and E. J. Brown, engineer of track, Chicago, Burlington & Quincy, Chicago.

In addition, C. J. Geyer, vice-president—construction and maintenance, Chesapeake & Ohio, Richmond, Va., and vice-president of the association, was automatically advanced to senior vice-president, succeeding Mr. Blair.

Abstracts of the addresses by President Loeffler, and Messrs. Aydelott, Budd, Magee and Trax, are presented below. Also on following pages are abstracts of the committee reports, indicating any action taken on recommendations regarding Manual material, and at least brief reference to all of the addresses presented in connection with the committee reports.

REPORT OF THE PRESIDENT

In his address at the opening session President Loeffler first related how the illness of George L. Sitton, now assistant to chief engineer of the Southern, had necessitated his resignation as president of the A.R.E.A. shortly after the 1950 convention. After recounting Mr. Sitton's record of service on standing committees and as an officer, he explained how the A.R.E.A. constitution had been revised during the past year to provide for the advancement or selection of officers to fill any positions which may become vacant. He went on to say that it was as a result of this revision that he had been advanced from vice-president to president, that T. A. Blair was moved up from junior vice-president to senior vice-president, and that C. J. Geyer had been elected by the Board of Direction to fill the unexpired term of junior vice-president.

President Loeffller reported that the membership of the association had shown a net gain of 39 over the preceding year and that the total of 3,092 members as of February 1, 1951, is a new peak for the association. He commented on the gain in junior members—now totaling 220—and, speaking to them directly, he said,

"your earnest cooperation in progressing the association's objectives will be expected. I am confident your efforts in this direction will be of substantial benefit to you as well as to the A.R.E.A."

President Loeffler stated that the A.R.E.A., because of the unstable world conditions now prevailing, "should be prepared to be of maximum service to the railway industry, and to the nation, in dealing with any serious emergency that might develop." Accordingly, he said, the Board of Direction had created five emergency committees, similar to those established during World War II, whose membership is well distributed among the various railroads of the United States, and which will "handle with dispatch any emergency problems" that may arise. Also, he said, "several standing committees have been instructed to review and, if necessary, recommend revisions and amendments to the A.R.E.A. Emergency Provisions and Specifications previously in effect."

Furthermore, he continued, 14 standing committees have been instructed to investigate and report on "Means of conserving labor and materials, including the adaptation of substitute noncritical materials, and specifications for the reclamation of released materials, tools and equipment, collaborating with Committee 3A—General Reclamation of the Purchases and Stores Division, A.A.R."

Noting that "research continues to occupy a front-line position in the work being done by our association," Mr. Loeffler said it was encouraging to know that the A.A.R. has made funds available in the amount of $354,770 for the use of the Engineering Division in progressing its research work in 1951. He reported that the research laboratory has been equipped with a test track during the past year and also with a number of modern testing machines and other essential equipment.

Discussing the future outlook of the railroad industry in his closing remarks, President Loeffler said that, "because of the availability of improved equipment and the development of new and better methods of handling railway construction, operation, and maintenance, the field of railway engineering continues to expand, and thereby to create increased opportunities for our members to serve the railway industry." While granting that "we have a past of achievement of which we are justly proud," he asked the membership not to be content with resting on past accomplishments, but rather to be ever alert to discover and take advantage of every possible opportunity to devise new and improved methods of meeting the association's objectives.

EFFECT OF A WAR ECONOMY

Much effort was made in the years following the close of World War II, said Mr. Aydelott in his address at the opening session, to prepare a blueprint for railroad transportation in the next emergency. This study also was made to avoid the ill effects of policies followed in World War II, which, despite the acute shortage of manpower on the railroads, took more than 350,000 railroad workers into the armed services during the war, and, because insufficient materials and manpower were provided during this same period, necessitated the scrapping of more than 150,000 freight cars in the two years immediately following the close of hostilities.

When the mobilization effort began to get under way about a year ago, said Mr. Aydelott, "our industry was importuned to bring its physical properties and rolling stock into prime condition so that there would be no question as to the ability of the railroads to provide transportation up to the foreseen requirements for both military and civilian purposes." After discussing the situation with respect to cars and locomotives, Mr. Aydelott said that estimated requirements of steel for new rail, fastenings and turnouts, materials used in the construction and maintenance of communications and signaling, as well as bridge steel and the metals required for passenger car construction and maintenance, were submitted to the production authorities of the government some weeks ago. "On February 27," he continued, "approval was given to all industrial items of M.R.O. under a very high rating, and it is anticipated that a supplementary order will soon follow to deal specifically with railroad requirements."

In dealing with the governmental agencies, Mr. Aydelott said, "we have stressed the importance" of continuing the postwar activities, such as the revamping of physical properties, the construction of modern yards and terminal stations, the improvement of alinement and gradient, and the acquisition of the most modern and efficient motive power and equipment. Furthermore, he said, "manpower is conserved wherever a machine replaces hand labor; consequently, with a manpower shortage in the offing, mechanization of roadway maintenance and other operations should not be interrupted."

Mr. Aydelott questioned whether the 18-25 age group will prove to be the reservoir of manpower that is indicated on the surface for building up a total strength of 3.5 million men in the armed forces. He warned that "potential losses of manpower by the railroads, particularly of men having some degree of skill, will be greater if the draft age is raised. It will be our purpose, therefore, to keep the manpower needs of the rail carriers before the several agencies" that make the policies.

Mr. Aydelott stated that the railroads must be supplied with materials necessary to meet normal losses due to age and obsolescence as well as increased wear and tear caused by heavy traffic. He added that "recently approved allocations of material for these purposes indicate an understanding of the situation by control agencies."

With respect to both manpower and materials, he said, "it is extremely necessary that, in progressing your maintenance and construction programs, you adopt those practices and methods which will secure the utmost in conservation." In conclusion, Mr. Aydelott said, "we believe our needs can be supplied through the diversion of tonnage now going into uses that contribute little, if anything, to the national defense. Our government, I am sure, recognizes the soundness of such a policy and is proceeding accordingly, but obviously it is a shift that cannot be made overnight."

RESEARCH HIGHLIGHTS

Without going into details of the research projects which are under way, Mr. Magee, in his address at the opening session, gave a general description of the A.R.E.A. research activities as a whole. He pictured these activities as falling into three separate classes: (a) Special studies made in the field using electrical stress measurement equipment; (b) service test installations where field observations are made to determine performance under regular service conditions; and (c) laboratory projects which are generally undertaken under cooperative agreements with some laboratory having well-qualified personnel and equipment.

Under the first classification, Mr. Magee mentioned

The Board of Direction of the American Railway Engineering Association in session March 12, the day before the start of the convention. Left to right (seated) are C. J. Geyer, vice-president-construction and maintenance, Chesapeake & Ohio (vice-president); R. P. Hart, chief operating officer, Missouri Pacific; T. A. Blair, chief engineer system, Atchison, Topeka & Santa Fe (senior vice-president); C. B. Bronson, maintenance of way assistant to vice-president, New York Central system; R. L. Groover, chief engineer, Atlantic Coast Line; N. D. Howard, secretary; L. S. Loeffler, assistant chief engineer, Great Northern (president); E. G. Gehrke, assistant to secretary; Nancy Campbell, stenographer; E. C. Vandenburgh, chief engineer, Chicago & North Western; I. H. Schram, chief engineer, Erie; C. G. Grove, chief engineer maintenance of way, Western region, Pennsylvania; F. S. Schwinn, assistant chief engineer, Missouri Pacific Lines. Left to right (standing) are F. McNellis, assistant secretary; G. W. Miller, engineer maintenance of way, Canadian Pacific; W. J. Hedley, assistant chief engineer, Wabash; G. M. O'Rourke, assistant engineer maintenance of way, Illinois Central; C. H. Mottier, vice-president and chief engineer, Illinois Central; A. B. Chapman, assistant engineer, Chicago, Milwaukee, St. Paul & Pacific. Other members of the board not shown include Armstrong Chinn, president, Terminal Railroad Association of St. Louis; Clark Hungerford, president, St. Louis-San Francisco; and J. D. Moffat, chief engineer, Western region, Pennsylvania (treasurer)

tests made in 1950 and measurements taken (1) to determine whether the new 115-lb. and 132-lb. RE rail designs had effected the stress reduction in the fillet area that was contemplated in the development tests: (2) to obtain information on the permissible unbalanced speed on curves; (3) to show the change in tension of crossing-frog bolts on a heat-treated bolted T-rail crossing; (4) to determine the horizontal and vertical pressures in the roadbed under passing trains; (5) to determine the transverse and longitudinal distribution of locomotive axle loads to the floor systems on bridges over highways; (6) to determine the impact and stresses in the concrete and reinforcing bars and the distribution of the load to concrete piles of two concrete trestles; and (7) to determine the maximum range of service stresses on the timber stringers of a 40-year old pile trestle. Tests were also made on the counterweight trusses of a bascule bridge.

Among the service tests, Mr. Magee mentioned that joint bars for the new 115-lb. and 132-lb. RE sections have been placed in the track and their performance checked by periodic measurements; that the installation of rail-joint lubricants which was established five years ago has been supplemented with an additional installation, with considerable emphasis placed on the use of end plugs; that various designs of tie plates are under test to obtain information on the required area and thickness for economical design; that tie plate fastenings and tie pads for controlling tie-plate cutting into the ties are under observation; that three test installations of various designs of spring washers have been made; that installations are under observation of heat-treated and new low-alloy steel rails and of high-strength bolts to replace rivets on 15 bridges; and that observation is being continued of selected locations of roadbed stabilization by means of grouting, driven ties, or sand piles, supplemented by laboratory analyses of the types of soils involved.

Under the classification of laboratory projects, Mr. Magee mentioned the large proportion of work being conducted at the University of Illinois. This includes metallurgic studies of failed controlled-cooled rails and of rails steels that give promise of being resistant to shelly-type failures, rolling-load tests on various designs of joint bars, tests of the fatigue strength of steel in rail webs as lowered by corroding agents, studies of the action of soil under repeated loadings, together with laboratory anaylses of these soils, and the observation of installations of stabilized roadbed. Mr. Magee also discussed the research work underway at Purdue University, Northwestern University, the Forest Products Laboratory, the Timber Engineering Company laboratory, the laboratory of the Southern, and at Battelle Institute.

The five new projects appearing on the approved research budget for the year 1951, which Mr. Magee said were "of special interest to railway engineers," include measurements to develop information on the service performance of 78-ft. rails compared with 39-ft. rails, the

development of laboratory tests for comparing the effectiveness of various types of fire-retardant paints, a study to be made of various types of chemicals for the control of vegetation growth, the construction of a new type of repeated load-testing machine for soils and ballast, and the development of new techniques for the cleaning and painting of structural steel.

THE JUNIOR MEMBERS' VIEW

At the outset of his address at the opening session Mr. Trax observed that his remarks were a "summation of the thoughts of five of your junior members." He named four of these and went on to say that the fifth was himself—"Assistant Supervisor Trax, who works on the 'tracks' of the Pennsylvania Railroad Company."

He then went on to tell how junior members benefit from their identification with the A.R.E.A. Such membership, he said, "enables us to hear and meet the leaders of our profession. We receive the bulletins and various publications and reports of the committees. We have an opportunity to attend the conventions where we may hear the reports and discussions. We can visit periodically exhibits of the latest devices that help us in the accomplishment of our work. All of these factors lead to constructive thinking, exchange of ideas, and keeping abreast of what is regarded as the latest and best practice in our profession. It would indeed be shortsighted if we failed to grasp these advantages offered through a junior membership."

After elaborating on these various points Mr. Trax said that, by merely being a member of this professional group, "we gain prestige and have a higher standing in railway engineering circles. It also indicates our interest in our jobs to our employers and may aid in bettering ourselves. As junior members we are permitted to gather much information and formulate our ideas which we hope may enable us, when we become full members, to contribute to the future success of the association."

After thus voicing his appreciation of the "good things that come to us through our junior membership," Mr. Trax went on to make a few suggestions, some of which, he said, "may meet with your favorable consideration." After pointing out that, due to lack of practical experience, many junior members are not qualified to serve on committees, he voiced the thought that, if there were some way in which such members could participate more in committee work, even as visitors, "it would be most encouraging to us. We read of the findings of the various committees and of the methods used in determining their findings, and are intrigued. We feel that it would promote a great deal of interest among the junior members if we could share in the work. It would also be a worthwhile benefit in preparing us for committee work when we became members. We would know more about what is expected of a committee member and we would learn how a committee functions so effectively."

Pointing out that in all likelihood there will be a continuing growth in the junior membership for several years to come, Mr. Trax expressed the thought that it might be well for the A.R.E.A. to promote more activities among the junior members. "There is no doubt that many advantages would result from the younger engineers carrying on activities of their own with proper guidance from older members. The opportunity for constructive planning, public presentation, and free discussion of ideas, is much broader in groups where the ages and interests of the participants are similar."

RAILROADS AT MID-CENTURY

In his address at the annual luncheon Mr. Budd, before developing his main theme, mentioned his long association with and interest in engineering work. "Great changes have taken place in the type of work performed by engineering staffs," he said, "but the importance of that work has not diminished one iota. The members of this organization have a great heritage, following as they do the romantic explorers and locating engineers who were responsible for the original construction of our railroads."

Mr. Budd then discussed the work of the engineers who took an active part in the location and construction of the American railway system, and in greatly improving it since actual construction of new lines came to a virtual standstill about 30 years ago.

Mr. Budd then turned to the situation of the railroads today and some of the problems faced by them. "One of the significant facts about our railroads," he said, "is that they have developed under private ownership, resulting in better service at a lower cost than under government ownership and operation in other countries. Freedom of car interchange has given the public all the advantages of a single, nationwide system in the movement of freight and passengers. The magnitude and significance of this accomplishment is too often lost on the general public and on most railroad employees."

In discussing the loss of railroad traffic to competing forms of transportation, Mr. Budd pointed out that the railroads are operating at a serious disadvantage. The railroads pay their own way in full while tax funds, to which the railroads themselves are contributing, pay part of the costs of truck, inland waterway and airline transportation.

Mr. Budd then discussed some recent developments which have added materially to the problems of the railroads in providing adequate satisfactory service at a reasonable cost and have made a re-examination of railroad facilities necessary. One of these, highly important to roads handling grain, is the change in harvesting and marketing that commodity which has made it difficult to determine, with any degree of accuracy, when and in what quantities grain will move during a year. Another is the five-day week adopted by industry which requires additional rolling stock and fixed plant to permit industry to ship in five days what was loaded in six days only a few years ago.

Still another is the five-day week for railway employees.

Mr. Budd next discussed the obligation of railroad men, in view of the tight competitive system, to keep the industry sound and solvent. To the engineering and maintenance personnel, he said, falls the task of finding better and cheaper means of maintaining the fixed property, and in their hands is the problem of developing facilities to enable those in the transportation department to serve the public better, faster, safer and cheaper.

Mr. Budd then discussed the use of machines to reduce man-hours, and research to improve materials, mentioned the new types of installations in yards and on the road which have changed the character of train and yard operations, told how speeds have been increased and better utilization of locomotives and cars has been achieved.

In conclusion, he suggested as a topic for study the economics of freight-car handling in yards. This, he said, can result in more workable track arrangements for present-day operations, bringing about a reduction in dead time and an increase in the productive potential of these cars.

Abstracts of A.R.E.A. Committee Reports and Technical Addresses

Presentations of 22 groups on more than 100 subjects are offered in digest form indicating the action taken on recommendations affecting the Manual

Records and Accounts

L. Wolf, Chairman*

This committee submitted progress reports on every one of its seven assignments.

Revision of Manual—The committee reported that it is engaged in a general review of the entire subject matter of its chapter in the Manual and is working out recommendations for revisions necessary to bring the material up to date and to make it more readable and useful.

Bibliography — The committee submitted a list of 90 books, pamphlets and articles on subjects pertaining to records and accounts for the period November 1949 to September 1950.

Office and Drafting Practices—In a report on this subject, the committee briefly discussed six topics. One is a calculator machine, to be used for stringlining curves, which determines the throw of the track for 32 stations. Another is a photo-copy machine which will photograph long drawings on micro-film and will also produce photo-copies of the drawings photographed at one-half or one-quarter their original size. Another item is reflex printing which can copy opaque material or reproduce old worn tracings without showing dirt or smudges. Another consists of direct-process print papers and films which have been improved in the color and permanency of the image produced. The fifth item is a new source of illumination by the cold cathode tube for machines exposing sensitized material. The last concerns a duplicating machine, based on the original lithographing process, whereby master copies can be made on specially treated material flexible enough to be used in a typewriter.

Use of Statistics—The committee reported that a review of the forms included in the Manual is in progress but no definite recommendations could be made at this time.

Construction Reports—Reporting that it had studied the question of the quality of paper used by railroads for property records, the committee presented a partial reproduction of an article entitled "Paper in the Railroad Industry" prepared by B. H. Moore of the A.A.R. In this article reference was made to a plastic spray for coating maps, drawings, photographs, and important documents, thus protecting them permanently from air and moisture. A tabulation describing the various classes of paper that might be used in railroad offices was also presented.

Valuation and Depreciation—A progress report was presented by the committee on current developments in connection with regulatory bodies and courts—one of three phases concerning valuation and depreciation. The report discusses the I.C.C. Bureau of Valuation's inability to catch up with the backlog of work with the present allocation of funds; elements of value; and cites two decisions by the Supreme Court which suggest the possibility of easing or modifying the ruling of the Commissioner of Internal Revenue requiring donated property, or contributions or grants in aid of construction, to be excluded when using depreciation accounting for road property.

Accounting Classifications—In this year's report, the committee pointed to the change in the name of Account 26 from Telephone and Telephone Lines to Communication Systems. This account will now include cost of telegraph, telephone, radio, radar, inductive train communication and other communication systems, including terminal equipment. However, any communication apparatus attached permanently to rolling stock is to be included in the same account as the equipment, and communication systems used for special purposes installed within a building are to be included in the same account as the building.

The committee also reported that the corresponding Maintenance of Way and Structures Account 247 is also changed to read Communication Systems instead of Telegraph and Telephone Lines and that the name of Operating Expense Account 247 is changed from Telegraph and Telephone Operations to Communication System Operation.

Obsolescence—Mr. Akers supplemented the committee report with an address on obsolescence in the dieselization program and how the change-over from steam to diesel power affects the capital and operating expense accounts. He stated very substantial sums of invested capital still remain to be recovered when obsolete facilities are finally and completely withdrawn from service. On the Southern, he stated, the facilities made obsolete through the substitution of diesel power for steam have a value approximating $50 million. This amount must not only be wiped out but also another substantial sum must be provided for needed diesel facilities. But there will be no obsolescence, he stated, where both steam and diesel road power are operated, nor will full operating economy result since facilities and labor force must be available for service and repair of both types of power. However, he continued, the opportunity afforded by following obsolescence rules is a real one and will permit the railways to use substantial credit.

*Assistant engineer, Missouri Pacific

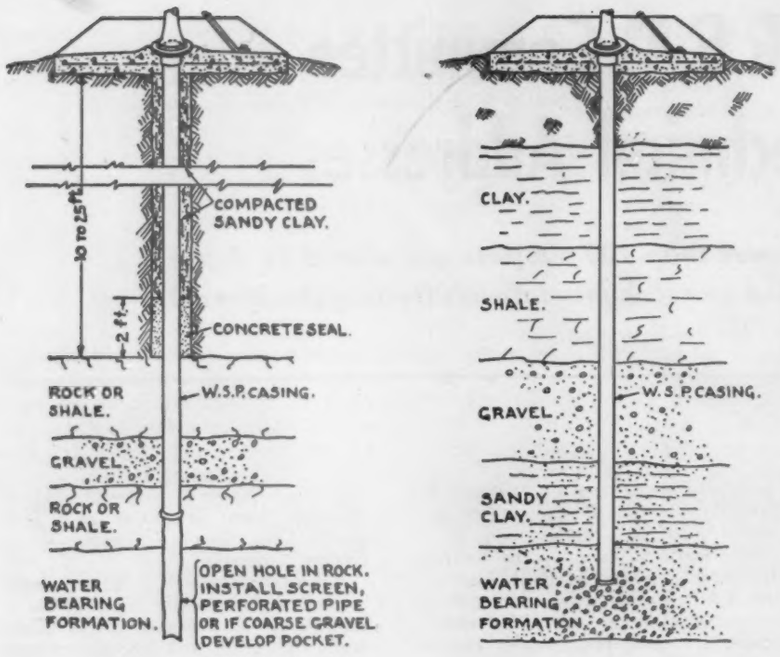
Contract Forms

L. A. Olson, Chairman*

The committee reported on two of its five assignments, both reports having to do with material recommended for the Manual.

Revision of Manual — Minor changes were recommended in the text in the Manual appearing under the heading of Forms of Agreement for Joint Use of Passenger Station Facilities. The committee also recommended reapproval without change of the Form of Agreement for the Use of Railway Property by High Pressure Pipe Lines with Special Reference to Pipe Lines Carrying Inflammable Oils and Gas; reapproval with some minor changes

*Designing engineer, Chesapeake & Ohio



PROPERLY DRILLED WELL WITH CONCRETE SEAL OR COMPACTED EARTH SEAL.

PROPERLY DRILLED WELL WITH NATURAL EARTH FORMING CASING SEAL.

Two of several methods used to insure a tight seal for excluding harmful bacteria from drilled wells as depicted by the Committee on Water Service and Sanitation in its report to the convention

of the Form of Agreement for Operation of Commissary and Boarding Outfits; and the deletion of the Form of Agreement of Pickup and Store-Door Delivery.

These recommendations were approved.

Flood Protection Projects—The committee recommended that the tentative draft that it presented as information last year for a Form of Agreement for Division of Work, Maintenance and Operation of Flood Protection Projects be adopted with minor revision and published in the Manual.

This recommendation was approved.

Yards and Terminals

W. H. Giles, Chairman*

The committee reported on six of its nine assignments. All except one of the reports were final and were submitted as information.

Classification Yards—Collaborating with the Committee on Economics of Railway Location and Operation, the committee presented a brief progress report on the effect of assisting gradients on drill tracks, ladder tracks and body tracks of a flat classification yard. The report pointed out the impracticability of setting up any fixed set of gradients that will be applicable to all yards of varying operating conditions and topography. But where the climate is not too severe, where cars handled are part loads and part empties, and where good alinement and surface for the tracks and turnouts will be maintained, the report stated that the following gradients may be considered satisfactory: 0.2 per cent for the 300-ft. section of a drill track which precedes the first switch, with the remainder of the track being level or with a light assisting grade; between 0.2 per cent and 0.3 per cent for ladder tracks; and 0.2 per cent or 0.25 per cent for a distance of about 300 ft. on body tracks, gradually decreasing thereafter, with a level gradient about 400 ft. long at the end of the section of track to be switched from the ladder in question.

Bibliography—An annual report on the bibliography of subjects pertaining to yards and terminals in recent publications was submitted.

Locomotive Terminal Facilities—In presenting this report, the committee directed attention to the fact that in 1947 it had revised the Manual section relating to Steam Locomotive Terminals; also that it had submitted a report as information on Diesel Locomotive Terminal Facilities in 1948, followed by another report covering Electric Locomotive Terminal Facilities in 1949. This year, the committee submitted a final report on Locomotive Terminals, which covers facilities for handling all three types of motive power, and recommended that it be adopted and published in the Manual in place of the existing 1947 material.

This recommendation was approved.

*Engineer of design, Missouri Pacific

Water Service

H. E. Silcox, Chairman*

Out of 12 assignments, this committee submitted reports on eight subjects as information, of which four were final reports while four were progress reports. A special report on water resources, as submitted to the President's Water Resources Policy Commission through the A.A.R., was also presented.

Revision of Manual—Minor revisions to the wording of the existing text under the heading Specifications for Welded Steel Tanks for Railway Water Service were recommended. Also, under the heading Standard Methods of Water Analysis and Interpretation of Results, five additional reagents and two additional procedures for raw water tests were recommended.

All of these recommendations were approved.

Corrosion of Steam Boilers—In a final report on Intercrystalline and Other Types of Corrosion of Steam Boilers, the committee pointed out that, though its representatives had attended all of the meetings of the Joint Research Committee on Boiler Feed Water Studies, as well as annual and semi-annual meetings of the American Society of Mechanical Engineers, for the past 25 years, a satisfactory agreement has never been reached between the railroad representatives and the Mechanical Section of the A.S.M.E. regarding the ratios in which sodium sulfate-hydroxide should be used as an embrittlement inhibitor. The committee was of the opinion that the railroads should disregard the sodium sulfate-hydroxide ratio recommendations as outlined in the A.S.M.E. Boiler Code of 1949, and, in turn, recommended (1) the complete investigation of boiler feed waters, with special reference to alkaline content and the presence of natural inhibitors; (2) the installation of embrittlement detectors on boilers operating in certain water districts on the railroads; (3) properly supervised and controlled use of sodium nitrate or lignin in water known to have embrittling tendencies, as outlined in previous reports of the committee; and (4) proper workmanship, resulting in tight boiler seams in all boiler construction.

Federal and State Regulations—In a brief progress report, this committee advised that a modification of the Interstate Quarantine Regulations.

*Assistant engineer water supply, Chesapeake & Ohio

as proposed by the U. S. Public Health Service, has been effected so that it is now possible to complete the drafting of a handbook on Servicing Area Facilities and Operation. The committee also advised that the A.A.R. Sanitation Research Project has completed its more than four years of research and study on toilet waste disposal from railway passenger cars.

Underground Pipe Lines—A final report was submitted on the assignment having to do with Methods and Materials for Protection of Underground Pipe Lines. Since a report on the corrosion of interior surfaces of pipes in return systems had been previously reported on, this report dealt primarily with the protection of the exterior surfaces of underground metal pipes from corrosion. First reviewing the factors entering into soil corrosion, and reporting the findings of the U.S. Bureau of Standards after 22 years of study of underground corrosion, the report dealt with metallic coatings, paints, asphaltic, bituminous, and cement mortar coatings, and then briefly discussed cathodic protection.

Waste Disposal—In a brief progress report, the committee expressed its opinion that its study on waste disposal, stream-pollution control, and waste treatment could continue indefinitely and that it felt that the interests of the railroads could be more effectively served through a joint or collaborating committee within the A.R.E.A. or within the A.A.R. for keeping abreast of the trend in waste-disposal regulations and the developments in methods of compliance. Accordingly, the committee made this recommendation.

Drinking Water Wells—A comprehensive report on Sanitation Practices for Location, Construction and Maintenance of Drinking Water Wells and Pumping Equipment was presented by the committee. The report discusses the location, construction and maintenance of drilled, driven, dug and bored wells, and of the methods of disinfecting new or repaired wells with chemicals that are available at every grocery store. The report touched on the subject of pumping equipment and ended with eight suggestions in regard to proper maintenance of wells.

Septic Tanks—Condensing much authoritative information already developed by U. S. and State Public Health Agencies on the design and maintenance of septic tanks, the committee adjusted this data to railway conditions and submitted a full report on this new assignment. This report covers the basic principles involved in the design and operation of small septic tanks to handle from 200 to 1,000 gal. of sewage flow per day and discusses the building of sewers, the single compartment septic tank, the distribution box, and subsurface absorption in detail.

Lubricating Oil Facilities—A final report prescribes approved practices for the design and installation of diesel lubricating oil facilities. It outlines the consist of clean oil distributing systems and dirty or waste oil return systems, and describes the warming of the oil, the general design of pipe lines, pumping arrangements and pressure controls.

Water Resources—A report on water resources by a special subcommittee states that the water requirements of the railroads are relatively large but will not increase; instead they will possibly decrease with the increased use of diesel locomotives. Also, that adequate information on the available water supplies in all communities and the availability of qualified engineers and funds to develop and install supplies in localities having difficulties because of shortages, with adequate control of sources of polution, might prove beneficial in conserving our water resources.

Cooperation with Universities

S. R. Hursh, Chairman*

A progress report was submitted on each of the committee's three assignments.

Stimulating Management Appreciation—The committee reported that arrangements have been made by which it is expected to develop the reaction of railroad managements to the importance of establishing suitable programs for the training and advancement of selected college graduates for future technical and managerial personnel.

Stimulating Student Interest—Under this assignment the committee reported on the number of addresses given by prominent railroad officers at colleges to stimulate a greater interest among college and university students in the science of transportation and its importance in the national economic structure. It also reported on the number of inspection trips made by students to inspect various railroad facilities and operations. The committee also stated that it doubted that sufficient publicity had been given to the research now being done at several schools through the cooperation of the Association of American Railroads.

Cooperative System of Education—This year's report of the committee reviewed the implications of the recommendations of the Scientific Advisory Committee dealing with the draft deferment of college students. It estimated that these recommended proposals would result in the deferment of not more than three per cent of the men in any age group for meeting the need for scientific, professional and specialized personnel. Because of the low birth rate in the thirties and the smaller number of students selecting engineering as a future vocation, the committee believes that the numbers graduating from engineering schools will fail to meet even industrial needs for a period of at least ten years, and that even the recommendations of the Scientific Advisory Committee would probably reduce this inadequate supply about 50 per cent. The committee warned that plans that will withdraw engineering talent from industry when it is important to step up development and production for military purposes need careful consideration.

Railroad Technical Personnel—Supplementing the committee's report, O. W. Eshbach, dean of Northwestern Technological Institute, spoke on the probable effect that present and proposed legislation will have on the number of engineering graduates—already insufficient to meet industries' needs. He stated that at the present rate of induction, it will require about a year and a half to process the 18-year old class and, hence, any boy who plans to go to college should do so. He pointed out that unless there is a supply of graduates there will be no graduate students.

*Assistant chief engineer, Maintenance, Pennsylvania

Economics—Operation

C. H. Blackman, Chairman*

One progress report submitted as information and another which included recommended revisions of the of the Manual were submitted by the Committee on Economics of Railway Location and Operation.

Revision of Manual—Under this assignment the committee recommended some minor changes in the material on train resistance by dynamometer car tests which appears under the heading Comparison of Different Lines, and offered some new material. It also recommended a few minor revisions in the text appearing under the heading Operating Data Required for a Study of the Economic Justification of Line and Grade Revisions.

These recommendations of the committee were approved.

Higher Train Speeds—The committee submitted a progress report as information on Part II of its assignment to investigate the effect of higher train speeds on railway revenues, operating expenses, and charges to capital account. Because operating speeds, train weights and service conditions are widely different for freight and passenger services, the study was divided into two parts, of which Part I, dealing with passenger service, was submitted by the committee at the 1947 annual meeting.

Part II of this assignment deals with merchandise freight service. Pointing out that the railroads cannot hope to match the inherently higher cruising

*Chief engineer, Louisville & Nashville

speed of airplanes, this report stated that the railroads could equal or surpass the speed of merchandise delivery by trucks, but they had to increase the overall average speed of freight trains from the present 16 m.p.h. on Class I roads to an overall schedule speed of 35 m.p.h. A maximum speed of 45 m.p.h. will achieve this goal without any intermediate stops. But if one stop of 40 min. duration is made every 100 mi., a maximum speed of 65 m.p.h. is needed.

For determining the effects of maximum train speeds of 45, 55, 65 and 75 m.p.h., the report made certain assumptions in regard to the grade profile, the average distance between stops, the duration of stops, the weight of a loaded car, and the average train consist, then showed the effect of the four speeds on engine crew expense, cost of fuel, motive power maintenance, car maintenance, and fixed charges. No appreciable increase in track maintenance was expected because, in most instances, a high standard of track maintenance is required for passenger trains operating at higher speeds than merchandise trains, and merchandise freights constitute only a small percentage of the total traffic.

Terminals and Trains—As a supplement to this committee report, L. K. Sillcox, executive vice-president of New York Air Brake Company, gave an address on Terminals and Trains, in which he emphasized the importance of time and how anything standing still, whether it be locomotives, cars, or shipments, represents dead time. Mr. Sillcox briefly discussed the need for good yard layouts and related facilities, and offered several suggestions on the inspection of cars and for the reduction of the time that cars are held in terminals.

Highways

W. H. Huffman, Chairman*

This committee reported on three of its eight assignments. Two were progress reports and the third was a final report, and all were presented as information.

Full-Depth Plank Crossings—In a progress report the committee proposed new material for the Manual on the Design and Specifications for Full-Depth Plank Crossings to replace existing specifications. The report was submitted as information so that the committee may have time to consider any comments or criticisms from the members before presenting the new specifications a year hence for adoption and inclusion in the Manual. The new material expands the present specifications to cover both the full-depth type and shimmed plank-type construction of wood plank crossings. An alternate arrangement of the planks adjacent to the rail is included, namely, either dapped to fit the rail, or set back about 2½ in. on each side to facilitate removal of the rail without disturbing the adjacent planks. The anchorage and installation procedure is outlined in detail.

Location of Parallel Highways—A progress report submitted as information, points out how not only the number of grade crossings but also the accident hazard potential have been increased to an extent undreamed of by the original planners by locating new highways parallel and close to existing railroad lines. Among the principles offered for the guidance of railroads, industries, public authorities and developers of property are the following: Such new highways should not be located less than 500 ft. and preferably at least 800 ft. from the normal right-of-way line of a railroad in light manufacturing areas, and a minimum distance of 2,000 ft. in heavy industrial areas; the number of public highways crossing railroad main tracks, either over, under, or at grade within a given industrial area, should be kept to a minimum and preferably ½ mi. apart; in urban industrial areas, it is desirable that through highways, limited access freeways, and full freeways or parkways planned to be constructed parallel to a railroad be located at least 1,000 ft. from the main tracks; in urban residential or retail commercial areas, this distance should be at least 200 ft.; and in rural areas, the desired distance is 1,000 ft.

Allocating Costs—In view of the fact that no adverse comments have been received since the presentation at the last annual meeting of the committee's recommendation for a system of fixed percentages for determining a railroad's share of the cost of public improvement projects affecting highway-railway crossings, the committee was of the belief that its previous report should be considered final until such time as public opinion, economic conditions or legislation should require it to be altered.

Highways—As a supplement to this report, General James A. Anderson, commission of highways for the commonwealth of Virginia and president of the American Association of State Highway Officers, gave an address pronouncing that the strength and greatness of this nation lies in its railroads, highways, airways, waterways and pipe lines. General Anderson announced the creation of the Texas Institute of Transportation in the Texas A. & M. College system for the purpose of research and advanced instruction in the various forms of transportation and urged that more duties, responsibility and authority be given younger men.

*Division engineer, Chicago & North Western

Work Equipment

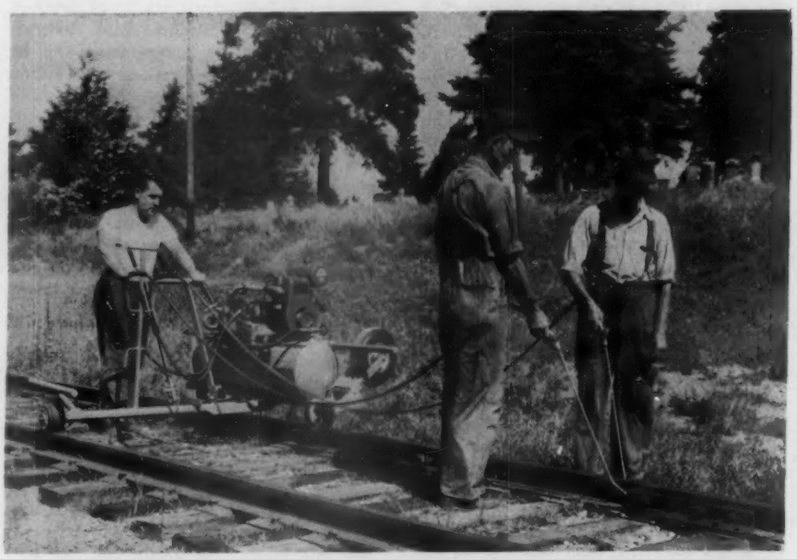
R. K. Johnson, Chairman*

This committee submitted six final reports and one progress report on its 10 assignments, the latter being on new developments.

Work Equipment Improvements—Inquiries were made by this committee of 135 work equipment manufacturers, 31 of whom listed a total of 280 specific improvements to one or more machines of their manufacture. These improvements were screened by the committee for those of sufficient importance to justify tabulation and then were listed in a report of 40 different types of work equipment units.

New Developments—In its report

*Superintendent work equipment and reclamation, Chesapeake & Ohio



One of several types of track-mounted rail-joint sprayers shown in the report of the Committee on Maintenance-of-Way Work Equipment. The machine shown here is equipped with a 30-gal. oil-storage tank

on new developments in work equipment, the committee, after excluding improvements and additions to existing machines and developments relative to fence-building equipment, special attachments for tractors and portable lighting outfits from its report, which are covered by other assignments, presented brief descriptions on 24 new machines. These included an ultrasonic detector car, an audigage flaw detector, three yard-cleaning machines, four ballast cleaners, a tamping machine, four spraying machines, two compressor-tractor units, an off-track weed burner, two pile hammers, a drum and cylinder carrier, a hydrocrane, a spreader-ditcher, a high-cycle generator, as well as a ballast maintenance car.

Needed Work Equipment—Opening its report with the statement that eight of the machines listed as needed in a similar report made in 1949 had not been marketed, the committee listed 45 other machines, devices and tools that are now needed. Of this number, 24 were indicated as being presently available for performing at least some of the functions desired in the suggested equipment. Ballast handling and cleaning devices prompted the most suggestions, followed closely by machines to be used in connection with rail laying, tie renewals and track work. The smaller number of suggestions covered ditching and earthmoving work, weeds and brush eradication, snow removal, highway crossings, fence-building, and bridge and building work.

Fence-Building Equipment — In a final report on equipment for fence building, the committee began by saying that most fencing jobs involve the maintenance or replacement of existing fences in comparatively short sections, making it difficult to justify the use of special equipment. Materials may be distributed by track motor cars or by trucks or tractors. When considerable fence is to be built out-of-face, trucks for the transportation of men, material and tools may be equipped with a power auger, a winch, or a post driver. Crawler-type tractors equipped with dozer blades and winches are said to be useful. The report also briefly discussed the use of portable augers, post drivers of both the powered and hand types, and power saws and tools used for stockyards and corrals.

Special Handling Cars—In a final report the committee stated that the use of railroad cars specially equipped to handle specific machines or combinations of machines will result in minimum time to load and unload the equipment, fewer personal injuries, less material required for blocking and shoring, less damage to car bodies and work equipment, and minimum amount of car-inspector time to approve loading for shipment. Dealing with the three types of specially-equipped cars—flat, box, and half flat-half box—the report then separately discussed these types, as well as methods of loading and fastening equipment, lighting and ventilation.

Tractor Attachments—In reporting on the special attachments for tractors the committee segregated those that can be adapted to railroad uses. These included earth-boring machines, power-operated winches, crane and boom attachments, tractor-mounted arc welders and air compressors, and attachments for tie loading, trenching, and tilling.

Portable Lighting Outfits—This committee classified portable lighting outfits as (1) off-track, wheel-mounted; (2) on-track, wheel-mounted; (3) highway trailer mounted; and (4) carryable. These consist principally of a generator to supply the current, one or more floodlights with stands, extension cords, outlets, reflectors, etc. As used in maintenance-of-way work, the generators are available in both the alternating and direct current types, 115 and 230 volts; and operating at 25, 50 and 60 cycles in the a.c. types. The capacities range from 600 to 3,000 watts in the small wheel-mounted and carryable types; up to 5,000 watts in the larger wheel-mounted outfits; and up to 25,000 watts in the highway trailer types.

Wood Preservation

G. B. Campbell, Chairman*

Progress reports were submitted by this committee on 5 of its 10 assignments.

Service Test Records—A progress report in tabular form was presented by the committee showing ties removed and the average life to date of ties in three test sections on the Baltimore & Ohio located at Barnsville, Md., Backus, Pa., and Hills-Loveland, Ohio. Four new test sections were set up on the Northern Pacific near Cle Elum, Wash., Scovia, and Joppa, N. D.

Wood-Destroying Insects—In reporting on its assignment to investigate destruction by wood-destroying insects and methods of prevention, this committee, which is collaborating with the Committee on Buildings and the Committee on Wood Bridges and Trestles, stated that, when conditions are propitious, Dr. A. L. Kammerer will make a report on the 1939 test at Florissant, Mo. It also reported that Dr. W. H. Fulweiler is assembling data from railroads in the South and Southwest on destruction by insects other than termites. Insects under observation are three species of termites, one species each of bees and ants, and six species of wood-boring beetles.

Incising Forest Products—This report, on the effect of incising on checks and splits in hardwood ties, announced that the Erie has started a test of incising and end-ironing Tc ties before seasoning, and that tests are still in progress on the Wheeling & Lake Erie division of the Nickel Plate, on the Great Northern and on the Soo Line. It also announced that the Boston & Maine has made the incising of mixed hardwood ties a standard practice.

Creosote Specifications — The committee stated that further study is warranted on its assignment to review the specifications for creosote, particularly with respect to limitation of residue above 355 deg. C., and other revisions resulting from changes in processes of manufacture.

Fire-Resistant Treatment — The committee reported that, owing to a lack of general agreement as to the standards by which fire resistance may be defined or evaluated, only a progress report could be presented. It is following the work of other committees in the field and hopes it will be prepared to present something more definite for consideration in the near future.

*Tie and timber agent, Missouri Pacific

Buildings

A. G. Dorland, Chairman*

This committee submitted two progress reports and two final reports on its 10 assignments.

Revision of Manual—New specifications for sewers and drainage were submitted to replace existing specifications adopted in 1949, and were recommended for adoption and publication in the Manual.

This recommendation was approved.

Lumber Specifications—The tentative draft — largely in tabular form — submitted last year on Yard Lumber Specifications for Railway Buildings, and edited since then for typographical errors as well as for minor references in the tables to bring them up to date, was again submitted and the committee recommended its adoption for publication in the Manual.

This recommendation was approved.

Docks and Wharves—In a progress report submitted as information the committee discussed generally the design and construction of piers, docks and wharves. Particular emphasis was placed on fire protection of these structures and the use of fire-resistant materials in both the substructures and superstructures.

Station Modernization—An extensive progress report was presented on the modernization of station buildings, bringing up to date a previous report submitted by this committee in 1943. Opening with a general discussion of the overall need for modernizing existing stations, the report goes into detail on the readjustment of the floor plan so that the waiting, rest, lounge, toilet and powder rooms are not located so as to obstruct the normal traffic route from the street entrance to the ticket office, baggage

*Assistant engineer, Elgin, Joliet & Eastern

checking facilities and train gates. It also discusses interior and exterior remodeling and offers many suggestions as to heating, lighting, furnishings and materials that can be used in obtaining a modern appearance.

Fire Prevention—Supplementing the report of this committee an address on "Fire Prevention" was presented, which had been prepared by J. P. Gallagher, general superintendent of insurance and fire protection, New York Central. In the absence of Mr. Gallagher his address was read by L. H. Laffoley, engineer of buildings, Canadian Pacific.

Continuous Welded Rail

H. B. Christianson, Chairman*

This is a new special committee organized on the recommendation of the Board of Direction under the guidance of the chairmen of the Committees on Economics of Railway Labor, Rail, and Track at a meeting held on May 7, 1950. The committee's overall assignment is defined specifically as follows:

That the subject of continuous welded rail be studied and investigated in the broadest and most comprehensive manner possible at the present time, from the processing of the rail and welds in fabrication to final disposition of the rail as scrap; and that this cradle-to-grave treatment should, so far as is practicable, reflect the most desirable processes and practices of welding, and best methods of transporting, laying and relaying; and also develop information on failures, repair, auxiliary or supplemental operations and practices necessary or desirable with this type of track construction, and include a comprehensive study of its economic worth.

At the first meeting of this committee, held on November 2, 1950, plans and methods for carrying out the committee work were discussed and five study assignments were set up relating to fabrication, laying, fastenings, maintenance, and economics.

Bibliography—The committee presented an extensive list of articles relating to continuous welded rail in various publications to bring up to date the bibliography prepared by R. E. Cramer and published in the 1939 A.R.E.A. Proceedings.

*Assistant chief engineer, system, Chicago, Milwaukee, St. Paul & Pacific

Roadway and Ballast

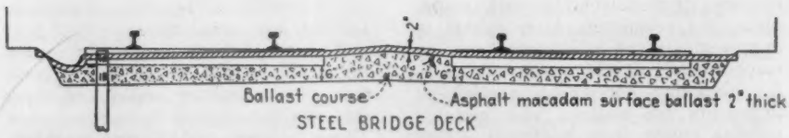
H. W. Legro, Chairman*

Including the revision of Manual, this committee presented reports on 7 of its 10 assignments.

Revision of Manual—The entire text now appearing in the Manual as Articles 401 and 402 under Formation of the Roadway was recommended for reapproval without change. Also, the text now appearing as Articles 901, 902 and 903 under the heading of Signs, and that under Cinder Ballast, was recommended for reapproval without change.

These recommendations were approved.

*Engineer of grade crossings, Boston & Maine



Typical section of the deck waterproofing on the New York Central's Niagara River bridge at Niagara Falls, Ont. This drawing accompanied the report of the Committee on Roadway and Ballast

Physical Properties of Earth Materials—The report deals with the first of two parts of this assignment, and is a third progress report on the study of roadbed, load capacity, relation to ballast, and allowable pressures. The tests covered by this report were performed under the southbound track of the New York Central near Trenton, Mich., in 1950. Pressure cells were installed under the tie plates on five crossties as well as 4 ft. below the bottom of the ties over a 16-ft. section. Recordings were taken for 20 test runs, after which the subgrade was pressure grouted and 22 more test runs were made. The cells are still in place for study during 1951.

The results of the data so far analyzed indicate that the vertical pressures recorded are very close to the range indicated by theoretical considerations. Pressure grouting stabilization changes the values of recorded pressures, but it does not destroy the relationship between load and pressure, and the effect of the stabilization is to reduce the indicated pressure.

For horizontal pressures there is greater divergence of the recorded values. After grouting, the plotted points are more closely in agreement with a straightline proportionality between load and pressure. While grouting usually decreases the pressures for equivalent load, the amount of such decrease does not seem sufficient to explain the good results received from pressure grouting. It seems very probable, therefore, according to the report, that the action of the cement slurry is also beneficial in some other way, such as waterproofing the subgrade, with a consequent prevention of moisture absorption and reduction in strength.

Culverts—The committee submitted a progress report on one of a two-part assignment on culverts. This report covered the recommended practice for the installation of culverts and was presented with the view of soliciting comments and criticisms before submitting the same text as Manual material at the next convention. The report covered the inspection, handling and installation of culverts as well as backfilling and general conditions.

Roadway: Formation and Protection—There are three parts to this assignment and the committee presented three progress reports on part (a), roadbed stabilization, and one progress report on part (c), chemical eradication of vegetation. One of the reports on the first part of the assignment represented the sixth progress report submitted on the investigation of roadbed stabilization and was accompanied by three tables, one showing the accumulative man-hours and maintenance expense saved by installations on the Santa Fe and the New York Central through pressure grouting, another showing similar information on 18 other roads, and the third table, presented for the first time, showing savings made in stabilization through the driving of poles and cull ties.

A report on the second phase of the first assignment represented the third progress report submitted by the committee on a laboratory investigation conducted at the University of Illinois on the factors that cause soft spots in roadbeds. Tests performed in 1950 consisted of 13 tests with ballast and 2 without ballast to extend the range of initial water contents used in the 1949 tests. Three tests were made to investigate whether or not the presence of a thin layer of sand between the ballast and subgrade would be beneficial. Test specimens were subjected to repeated loads at the placement moisture content for a period of 500 min., and the deformation of the subgrade was observed. Then the subgrade was flooded and the test continued until the penetration of the test plate into the ballast became excessive. The series of tests has demonstrated that the development of soft spots could probably be retarded by compacting embankments originally at a moisture content a few per cent above the optimum value.

A first progress report was submitted on the investigation of stability and methods of strengthening existing fills. Field investigations were made of fills at three locations by a staff of the University of Illinois. One involved an unstable fill on the Nickel Plate, in which three slides occurred. A second investigation was of a fill near Creston, Iowa, on the Burlington, where a slide occurred. The third was on an existing dike, 65 ft. high, adjacent to a power plant along a canal

near Montreal, Que. Experiences at the dike and at numerous other railroads fills have indicated that auger borings and undisturbed samples taken with 2-in. Shelby tubes provide considerable information about the characteristics of the material, but the committee reported that, as yet, information has not been definite enough to permit evaluating the urgency of stabilization. The committee recommended that full-scale excavations be arranged to determine the actual structure of the materials in some of the older fills.

The progress report on subassignment (c) was on chemical eradication of vegetation. After tracing the development of chemical weed control on railroads, the committee dealt with chemicals for top-killing of weeds by contact dosages and those that kill by soil poisoning, and pointed out that these formulations are designed principally for agricultural purposes. With the view that the railroads lack specific information on the possibilities for effectiveness and economy through the use of these chemicals in various combinations, it proposed to conduct research on various test plots over a period of three years to develop new chemical combinations.

Fences—In a final report, the committee stated that a study indicates little demand or need for standardization of fence maintenance or inspection. Moreover, statutory and other requirements for fencing are so varied with respect to the railroads generally as to make the preparation of standard instructions impracticable.

Signs—The committee reported that roadway signs are primarily for use by employees who work on their territories by day and by night. With some exceptions, the reflectorization of signs of all types would result in unnecessary expense, which cannot be justified. But certain types may be reflectorized where distinct warnings of special conditions are considered necessary by night as well as by day. Some of these are speed limit signs, drawbridge approach signs, yard limit signs, snow plow and flanger signs, spring switch signs, and motor car indicator signs, the flectorization of which may be accomplished by means of reflector buttons, coatings fastened by adhesives, plastics and paint.

Ballast—Progress reports on two of the three subassignments were presented. One on ballasting practices involved the study of reballasting and resurfacing track. There was a great variation in the answers received from 35 individuals to a questionnaire relative to the kind and size of ballast used, reports of wear tests, the amount of lift, the tools and equipment used, the number of men used, daily progress, and cost per mile, and the report covered this diverse information in detail. With one exception, all roads reported negligible breakage of stone through the use of tamping machinery.

The report on the second subassignment dealt with ballast-cleaning practices, but again there was a wide variation in replies to a questionnaire. Seven of the reporting railroads stated that they do not clean ballast at all, but failed to indicate what type of ballast is being used. Some roads cleaned ballast to a limited extent, while 12 roads using crushed materials reported considerable cleaning. The cycle of cleaning varies from 1 to 20 years but on most roads the cycle falls in the range of 1 to 6 years, depending on conditions. Several roads reported on the use of new ballast-cleaning and crib-cleaning machines. Machine-cleaning production was reported generally to be from 650 to 1,200 ft. per day for mole-type machines, and from 11,000 ft. to 40,000 ft. per day with the large on-track machines. The number of men worked with the machines showed great variation both for foremen and laborers employed. The reported cost per mile also varied widely. Considerable variation was reported also in the application of additional stone ballast after cleaning.

Special Types of Ballast—A progress report was presented on the waterproofing of the deck, reballasting, and the application of an asphalt covering over the ballast on the New York Central's Niagara River arch bridge at Niagara Falls, Ont., during the late summer of 1947. This work consisted of removing each track, cleaning off all the old ballast, repairing and renewing the downpipes, waterproofing the deck, placing new stone ballast and sawed ties, and then applying asphalt paving over the ballast with a waterproof spray top coat of bitumen and a coating of sand. This report goes into detail as to the procedure and equipment used to carry out this work, and reports that a recent inspection indicates that performance to date is quite satisfactory.

Track

F. J. Bishop, Chairman*

This committee presented progress reports on 7 of its 10 assignments, including the revision of Manual.

Revision of Manual—Under this assignment a definition of tie-plate eccentricity was recommended for addition to the Glossary and two minor changes in the text under the heading of Specifications for Laying Rail were also recommended.

These recommendations were approved.

Track Tools—The committee reported that it had made an investigation to substitute steel for malleable iron in the web of the snath, but, since malleable iron will resist rust better than steel, it was the opinion that steel should not be considered as a substitute. A reversible tie tong had also been considered but, when demonstrations proved that such a tool could not be used safely, it was decided that such a tool should not be used. The committee reported favorably on the use of aluminum track tools and stated that developments in such tools will be watched closely and reported on later.

For reclaiming alloy track tools, the committee recommended that, owing to continuous changes in alloy, company forces should be limited to grinding methods and, where it is advisable to reclaim by heating methods, the tool should be returned to the manufacturer.

Instructions to this effect were recommended to be shown in the Manual under Recommended Limits of Wear for Tools to Be Reclaimed.

This recommendation was approved.

Plans for Switches, Frogs, Crossings, etc.—The committee prepared revisions of a large number of the trackwork plans to include several widely used details on which the patents have expired and other improvements. A total of 21 plans were offered with the recommendation that they be adopted as recommended practice for publication in the Portfolio of Trackwork Plans and that the previous issue of each plan be withdrawn. The committee also reported that time did not permit the revision of two other plans to correspond to the revised lengths and curvatures that were incorporated among the 21 plans, and recommended their temporary withdrawal from the Portfolio until such time as new plans could be presented. A revised plan showing details and typical application of hook plates was also offered for adoption, which in turn called for revisions in 18 other plans.

The committee also reported that it had completely edited the Specifications for Special Trackwork—Appendix A in the Portfolio of Trackwork Plans to bring it up to date and to clarify the intent of the requirements. This was done in collaboration with the Standardization Committee of the Manganese Track Society. The revised material was recommended for adoption to replace existing text in the Portfolio.

All of these recommendations were approved.

A second part of this assignment dealt with a report on the service tests being conducted on five different designs of manganese castings in crossings and on the shot-peened frog installed at McCook, Ill. It was reported that one casting had been removed after eight months of service, another after three years of service, and a third after four and a half years. Two castings, one with two years and another with four years of service, are still in use.

The designs having a base plate with a web between this plate and the running tread were reported as giving the best service performance.

A third part of this assignment was a report on the service tests of solid

*Chief engineer, Akron, Canton & Youngstown

and manganese insert crossings supported by steel T-beams and longitudinal timbers, four of which were installed in 1946 and two in 1949 at an intersection of the Indiana Harbor Belt and the Chicago & Western Indiana.

In those installed in 1946, the two solid manganese castings have cracks that have progressed to a moderate extent since the last report, and show some batter; the two manganese insert castings have developed fewer cracks on the T-beam support, but the difference is not yet significant. In the two solid manganese crossings installed in 1949, a few flangeway cracks have developed at two corners of the crossing on the steel substructure, while shorter cracks were observed at all four corners of the crossing on timbers. The steel-supported crossing required more frequent surfacing on the stone ballast because of the heavy impacts which vibrate the stones out of place, while the stones are believed to imbed themselves into the bottoms of the wood ties of the timber-supported crossing and so are less easily displaced.

A report on the fourth part of this assignment was a first progress report of an investigation for determining the reactive characteristics required of spring washers for more economical and efficient maintenance of adequate bolt tension in crossing and turnout frog bolts. Measurements have indicated that loss in bolt tension was not due to the nuts backing off as none of the nuts backed off during two test cycles. Also, no indication was found that the bolts have been stretched beyond their yield point by the additional dynamic loads produced by traffic. Loss of tension was found to be due to wear. The data on loss in bolt tension with reference to pull-in measurements have not formed good enough patterns and further study is planned. In general, the high-reaction types of spring washers have shown better ability to maintain bolt tension than the low-reaction types, but the effectiveness of the high-reaction types has not been as much as anticipated.

Design of Tie Plates—The committee submitted reports on this assignment in two parts. For the first part, the committee submitted two special tie plate designs for use on curves only, and which were recommended for adoption and publication in the Manual.

This recommendation was adopted.

The second part concerned service tests of seven designs of tie plates for a rail base width of 5½ in. The 13-in. length tie plate has effected a reduction in tie wear of 26 to 30 per cent on a curve where damaging pressures have occurred. The thinnest 11-in. tie plate was in the upper part of the range of plate cutting on the test curve, but these minor differences are not significant.

No substantial differences in tie wear of the 8½-in. by 11-in. tie plate and the 11-in. plates of lesser widths were found. The committee further stated that a service period of five more years may be required to develop conclusive data.

Hold-Down Fastenings — Tie Pads—This assignment consists of observations of two service tests of hold-down fastenings and tie pads with the objective of determining the more economical and effective methods for extending the service life of ties by minimizing tie-plate cutting. The committee reported that 11 new test sections were added to the major test section near London, Ky., on the Louisville & Nashville, and 7 new test sections were installed near East Bernstadt, Ky. Reports on these tests, and also on the seven arrangements of hold-down fastenings now being conducted on the Illinois Central, will be reported upon in 1951.

Preventing Frozen Joints—This assignment was reported upon in two parts: one covering the fifth service period performance of the rail joint lubrication test installation on the Chicago, Burlington & Quincy, and the other a brief description of the second test installation made in June 1950 on the Illinois Central. After five years of tests on the Burlington, the committee reported that none of the lubricants has shown a superiority for effecting a reduction in joint wear or for bringing about a good uniformity of joint gap width. Observations of the dismantled joints have shown the difficulty in keeping lubrication on the fishings, particularly the top ones. The value of lubricants seems to be for rust prevention rather than for joint lubrication, and results have all shown that brushed-on lubricants have a relatively short service life. The committee concluded that a longer service life of the compounds for the prevention of corrosion is definitely needed.

In the second part of this report, the committee stated that the test installation on the Illinois Central was being made to develop information leading to more effective and economical methods for preserving joints over a much longer service period. Ten test sections were reported as installed in June 1950 and a complete description of the various sections is to be given with next year's progress report.

Speed on Curves—On its assignment to make a critical review of the subject of speed on curves as affected by present-day equipment, the committee presented a report giving a description and the results of tests made in May 1950 on the Louisville & Nashville to obtain data for re-examining the present practice of establishing maximum comfortable speed on curved track on the basis of 3 in. unbalanced elevation. Special arrangements were made with the railroad to apply accelerometers to the C.&O. track inspection car on a regular inspection run, measurements being obtained on sections of the L.&N. main line containing many curves of various degrees of curvature between Cincinnati, Ohio, and Bowling Green, Ky. In addition, 12 observers rode in the test car and recorded their impressions of the riding condition of each curve, this information being correlated with the measured lateral acceleration and calculated unbalanced elevation for each curve. Much valuable data were obtained and it is proposed to conduct a further series of tests.

Ties

B. D. Howe, Chairman*

One final and five progress reports were submitted by this committee on its eight assignments, all presented as information.

Adherence to Specifications—The committee reported that it had visited eight treating plants and found generally that the treating plant storage yards were well maintained, which was attributed in large measure to the adoption of mechanical means for handling ties. Nonconformance to the specification regarding the marking of ties to indicate size, ownership and identity of the inspector was observed, leading the committee to recommend that the nonconforming railroads should adopt the Specification for Crossties entitled Marking Ties to indicate Size Acceptance.

Tie Renewal Record—It was reported that the number of ties applied in 1949 in the United States was slightly over 30 million—the smallest number for many years—and that the average cost per tie was $0.16 above the 1948 average. Figures giving the number and cost of crossties laid in replacement were published in an earlier bulletin.

Splitting and Mechanical Wear—A great deal of progress was reported on methods of retarding the splitting and the mechanical wear of ties. Collaborating with the Committee on Track and with the National Lumber Manufacturers' Association, promising progress toward increasing the service life of ties was made through a research program being carried out in the Timber Engineering Company laboratory. Extensive studies and experimentation included the chemical analyses of wood in the tie plate area, coatings for surface and end treatments, the use of supersonic vibrations as a possible means for increasing preservative penetration, the development of a laminated wood tie, and the use of tie inserts.

Bituminous Coatings — Several roads were reported as conducting tests on the use of bituminous compounds as a surface coating of ties to prevent or retard the natural weathering and checking. A questionnaire sent out to all members of the Tie Committee developed that four roads are making such tests and five others expect to start similar tests at an early date.

*Chief lumber inspector, Louisville & Nashville.

Causes of Tie Removal—From data collected by several railroads on the causes leading to the removal of ties, the committee, though pointing out that there is not yet sufficient diversification of territories or of inspecting personnel to come to a definite conclusion, made the following comments: A very large majority of the treated oak ties removed from the track have failed from splitting, except in the South where decay was the principal cause; a large number of treated ties of the needle-leafed group are removed because of plate cutting, and a substantial number removed because of splitting; and the major portion of treated gum ties removed failed because of either splitting or decay.

Prebored Ties—In a final report the committee listed six reasons for preboring ties, viz.—less wood damage from cut spikes, greater spike holding power, spikes have greater resistance to side thrust, track line and gage are more easily attained, better preservative penetration is achieved, and additional boring cost is much less than the benefits derived. The report also stated that prebored ties are often supplied to locations where the boring does not fit the rail and plates, as a result of lack of careful planning and programming, but in such instances the driving of creosoted plugs in the prebored holes will permit the driving of spikes in the tie plate holes with little or no difficulty.

Crosstie Research—The progress that has been made in carrying out a research program to find ways of making ties last longer was described by G. M. Magee, research engineer, of the A.A.R. Engineering Division, in connection with the presentation of this report.

Rail

Ray McBrian, Chairman*

This committee reported on 10 of its 11 assignments, including the revision of Manual.

Revision of Manual—As a result of conferences with representatives of the steel manufacturers continuing over the last three years, the committee recommended certain changes in the text now appearing in the Manual under Specifications for Open-Hearth Rails and Specifications for Quenched Carbon-Steel Joint Bars. The changes affecting rail were made (a) to separate the chemical analysis of rails 70 to 90 lb. per yard into two groups—70 to 80 lb. and 81 to 90 lb.—with a lower carbon range assigned to the rails from 70 to 80 lb; (b) to authorize the use of the average analysis from three ingots to conform with present mill practice; (c) to place the entire 1/16-in. tolerance in bolt size on the plus side, eliminating bolt holes less than standard size; (d) to permit stamping "CC" instead of branding on rails 100 lb. per yd. and lighter, except 100 lb. RE; and (e) to fix more exactly the position of the thermocouple at the end of the rail in the middle tier in control cooling. The changes affecting joint bars were minor except two, one of which permits a higher manganese content in order to give the manufacturers greater leeway, while the other calls for a greater number of tests.

The committee also recommended that existing Manual material appearing under Beveling or Slotting of Rail-Ends be reapproved without change, and as a result of tests conducted by R. P. Winton and C. B. Bronson, the substitution of revised text, for existing Manual material relating to Specifications for Heat-Treated Carbon-Steel and Alloy-Steel Track Bolts.

All these recommendations were approved.

Service Life, Causes of Rail Failures—A report submitted on this assignment dealt with the investigation of failures in railroad rails as conducted by R. E. Cramer and his staff at the University of Illinois. A total of 23 failed control-cooled rails were examined, three of which failed from transverse fissures induced by shatter cracks, eight were transverse fissures induced by hot torn steel, seven were detail fractures from shelling, and the other five failures were a detail fracture from a head check, a web crack from a spike-maul blow, a base break from a welded electric bond, a web crack possibly from a seam, and a failure caused by a lap on the rail tread. It was found that one of the three transverse fissures from shatter cracks was in a rail rolled only one month after the beginning of control cooling at the mill, and the other two were rolled during winter months at a mill where it was found that the lids of the cooling containers were of light construction and the ends were bent up in some cases, leaving an air space of two or three inches.

Rail Failure Statistics—The committee presented statistics in tabular and graph form on the rail failures reported to December 31, 1949, in practically all of the main line railway mileage in the United States and Canada. The committee observed that the rate of failures for 10 years of service from all mills runs quite low for the first three years and then increases more rapidly in a straight-line relation, with the maximum rate reached in the ninth year and decreasing in the tenth year. This is the trend as was reported last year and the committee observes that it will be interesting to see if this same pattern continues.

It was also reported that several railways are experiencing a considerable number of cracks at the first bolt hole and in the upper filler at the rail ends and that it seems certain that the influence of this type of failure will have a marked effect on the rail failure record. However, it is expected that the web failures reported within joint-bar limits may be reduced by the new design of rail sections and the new bolt-hole spacing. It is also to be expected that the work on lubrication and prevention of corrosion may have important possibilities in lowering this failure rate.

Rail-End Batter—The committee presented a final report on its investigation into the causes and remedies of rail end batter. Nine railroads and one contract welder were invited to weld 50 joints each, using the procedures in use on their own railroad on a portion of the southbound track on the Richmond, Fredericksburg & Potomac, near Penola, Va., in May 1941. Seven of the panels were welded by the oxyacetylene process, three panels by the d.c. electric-arc process, and one panel by the a.c. electric-arc process. The committee came to the following general conclusions: (1) Satisfactory welding can be done by either the oxyacetylene or electric-arc processes; (2) the cost of labor and fuel is higher for the oxyacetylene process than for the electric-arc process; (3) the investment in equipment for the oxyacetylene process is less than that for the electric-arc process; (4) the cost of reconditioning

In a final report on rail end batter, the Committee on Rail reported that grinding produces a much better surface after building up rail ends by welding than is possible by forging

*Engineer standards and research, Denver & Rio Grande Western

rail ends by heating and forging is nearly the same as that of building up by the oxyacetylene process; (5) there is no advantage of the multiflame oxyacetylene tips; (6) the rail should be preheated before electric welding; (7) grinding produces a better surface than finishing by forging; and (8) the skill of the welder is a very important factor.

Economics of Rail Sizes—On its assignment to investigate the economic value of various sizes of rail, the committee reported on the maintenance charges, after six years of service, on two adjoining sections of track, each about 20.5 miles long, on the Illinois Central where 112-lb. rail was laid on one section and 131-lb. rail on the other. The annual savings attributed to the use of 131-lb. material, as compared with the 112-lb. track, were $592 per mile, representing an annual saving of 17 per cent.

Service Tests of Joint Bars—This year's report on the assignment of conducting service tests of various types of joint bars described the stress measurements taken in May-July 1949 on the 115-lb. RE rail test sections installed on the Chicago & North Western, and the results obtained in these measurements. The report was accompanied by cross sections of the five types of joint bars under test, a location drawing and charts showing the maximum dynamic stresses and frequency of occurrence of the stresses at the middle of the joint bars. The committee reported that the same conclusions can be drawn from these tests on 115-lb. RE joint bars as were given by the committee report last year for the 132-lb. RE joint bars under test on the Santa Fe. The results obtained indicate that the stresses developed in service in the new headfree designs are well within the fatigue strength of the bars as determined by laboratory tests. Although the 115-lb. RE bars under test on the North Western are not on curved track where higher stresses may be expected, the reserve appears sufficient to give assurance that these designs of joint bars will give satisfactory service from the standpoint of development of fatigue failures.

Joint-Bar Wear and Failures—On its assignment to study joint-bar wear and failures, including the revision of design and specifications for new bars and bars for maintenance repairs, the committee pointed to the revisions of the Specifications for Quenched Carbon-Steel Joint Bars which it recommended and were presented by the subcommittee on Revision of Manual, and submitted progress reports on Appendix 8-a covering rolling-load tests of joint bars and Appendix 8-b dealing with service tests of 112-lb. joint bars of four metallurgies on the Burlington. Since no test bars had heretofore been made from the same heat, the committee reported that it had made arrangements to have observations made on two sets of joint bars made up of (a) 13 sets of rolled joint bars for 132-lb. RE rail, to be heated to the proper temperature so that their physical properties will be well above that required in the joint bar specification; and (b) 13 sets of rolled joint bars for 132-lb. RE rail, to be quenched at a temperature sufficiently low so that their physical properties will not meet specification requirements for tensile and yield strengths. In addition, it arranged for 50 sets of joint bars which will be held in bar form from the same heat for possible future tests.

The progress report on Appendix 8-a was the ninth report of the rolling-load tests conducted during the last year at the University of Illinois. The joint bar tests were made in three 33-in. stroke rolling machines as described in the report made in 1939, and the criterion for bar failure was taken to be the number of cycles of loading to propagate a fatigue crack to ½ of the bar height. In the last year, 24 tests, being divided equally between the 115-lb. K22 headfree 36-in. bars and the 131-lb. K4 headfree 39-in. long-toe bars, were made. The 12 tests of the 131-lb. bars averaged 1,279,600 cycles before failure, as compared with an average of 648,950 cycles for the 12 tests of the 115-lb. bars. The committee believes that the gouging of the 115-lb. bars could be eliminated altogether either by larger pressed easements or by locating the easements higher up on the bars. Also, that Brinell and tensile tests, made on 42 of 242 bars sent in as having failed in service, indicated lower hardness on the cross section at the center of the head of the bar than near the bar surface.

The report on Appendix 8-b dealt with the test installations of joint bars of four metallurgies, the purpose of which is to compare the service performance and the resistance to developing fatigue cracks at the top mid-length of joint bars with higher strength steel and bars of the A.R.E.A. specification chemistry and heat treatment. Measurements were made on October 11, 1950, to compare the change in out-to-out distance of the joint bars and the sag or dip at the joints. From an available pull-in distance of 0.38 in. of the new head-contact joint bars before they contact the rail web, field measurements showed that the pull-in distance had been reduced to an average varying from 0.12 to 0.15 in. for the four types of bars. A table submitted to show the annual measurements of rail end sag showed an increasing drop from 1940 to 1946. The rail ends were built up in the summer of 1947, but measurements taken in 1950 show the dip to be increasing again as compared with 1948 measurements.

Fractures from Locomotive Burns—In a brief report on rail fractures resulting from engine wheel burns, including the effect of repairing such burns by oxyacetylene or electric welding, the committee reported that two more welded rails, of the original 21 rail specimens that were artificially burned, have been tested since the last report in the rolling-load machines. This leaves one burned specimen, three specimens repaired by hand welding, and four specimens repaired by the Oxweld machine remaining to be tested in this group.

Another 50 rail specimens were sent to the University of Illinois to be artificially burned, 11 of which were burned so as to locate the burn in the wheel path and yet produce failure within a reasonable number of rolling-load cycles. Three of these 11 specimens already have been tested, one specimen failing at 625,000 cycles, while the other two did not fail after 2 million cycles. The committee stated that sufficient data have not been accumulated at the present time to draw any conclusions.

Shelly Spots—Head Checks—A progress report was submitted by the committee on its assignment to study the causes of shelly spots and head checks in rail, including methods for their prevention. The committee reported that it has been unable to determine any positive solution for this problem. The installations of heat-treated rail continue to perform well and the committee believes that installations of recently installed alloy rail will also prove effective in retarding the onset of shelling, but both of these rails are expensive. Research will be continued with the hope that some simple and economical solution may be forthcomng. The committee also reported on the good service performance of the 132-lb. RE heat-treated rails on the Chesapeake & Ohio, the 155-lb. heat-treated rails on the Pennslyvania, and the 132-lb. RE heat-treated rails on the Norfolk & Western.

Included as an appendix was the ninth progress report of the shelly rail studies being conducted under the supervision of R. E. Cramer, special research associate professor of engineering materials, at the University of Illinois. This report discussed the rolling-load and physical tests on two specimens of 132-lb. heat-treated rails which showed marked increases in Brinell hardness, yield and tensile strengths, elongation, and endurance limit because of the heat-treatment, and withstood 3.5 times more cycles of loading than the as-rolled rails did before failure. Rolling-load tests on seven rails which were flame hardened different amounts on the rail treads showed some advantage over standard rails, it was reported, and tests on two specimens of alloy steel rails showed physical properties comparable to the heat-treated rails but greater endurance in withstanding the rolling-load tests. This report also discussed tests on two head-free rails, the examination of seven detail fractures from shelling in service, a new cradle-type rolling-load machine, and a description of the technique employed to produce electron micrographs.

Developments Affecting Rail Sections—Under this assignment the subcommittee reported that four topics are being pursued, i.e., (a) continua-

tion of the study of fatigue of rail web steel; (b) field measurement of stresses (outside of joint) in the new rail sections; (c) continuation of the study of rail web stresses within joint bar limits; and (d) redesign of 100-lb. RE rail and joint bars. In discussing the fatigue tests of rail webs, the report and an appendix show marked reduction in endurance limits for all types of stress cycles when the specimen is subjected to corrosion, with the most severe reduction being for those types of stress cycles where the predominating stress is tensile. The appendix report on laboratory fatigue tests points toward the necessity for overcoming any severe corrosive condition which affects the rail web, particularly within the joint. From the tests conducted on tangent track under conditions typical of main-line operation, this report concludes that the stresses in the upper rail fillets outside of the joint bar limits have been reduced by the new 115-lb. RE section to well within the fatigue strength of rail steel, and that the concentrated rail web stresses within the joint bar limits at the rail end and at the first bolt hole with the new 115-lb. RE rail section and new A.R.E.A. bolt spacing are well within the limits that can be tolerated, provided that no unusual corrosion conditions exist that substantially reduce the fatigue strength of the rail steel.

Another appendix to this report dealt with the field measurement of stresses found near the edges of the first bolt hole and at the upper fillets at the end of 115-lb. RE rail laid in test sections on the North Western near Sterling, Ill. The test section included the headfree 36-in. joint bars of new A.R.E.A. design of two bolt spacings—4 hole and 6 hole. Regular train operation over this track included both steam and diesel locomotive and passenger and freight trains, covering a speed range up to 80 m.p.h. The stress measurements indicate that with this improved rail section the stress range is as well balanced as can be expected on both the gage and field sides; that there is no definite trend for a change in stress range or increase in stress with the increase in speed; and that the range in dynamic stresses is less than one-half of the fatigue strength of the rail steel. From this, the report stated that it is evident that the new 115-lb. RE rail design on tangent track with either of the bolt hole spacings has sufficient fatigue strength to resist the development of fatigue cracks, provided no unusual corrosion conditions exist.

Rail Failure Statistics—G. M. Magee, research engineer, Engineering Division, supplemented the committee report by an address in which he discussed rail failure statistics and their reporting.

Shelly Rail Research—In a second address presented in conjunction with the committee report, L. S. Crane, engineer of tests, Southern, told of the research under way in an attack on the shelly rail problem. The attack was organized along three lines, he said. The first consisted of studies which could be handled directly by the committee; the second covered studies to be handled by the Engineering Division, research staff; and the third concerned studies to be handled at the University of Illinois.

The committtee's research studies established the fact, Mr. Crane said, that the tendency of rail to shell bore no relationship to its chemistry, except as the chemistry affected the hardness of the running surface. Other studies revealed that the new 115-lb. and 155-lb. RE sections were beneficial in reducing the shelling tendency as were also the heat treatment of normal rail steel and the development of an alloy-steel rail. Since economic considerations bar the use of the treated and alloy rails, further investigations are being pressed with the hope of finding some simple and economical solution.

Shelly Rail Studies—In a third supplement to the report, R. E. Cramer, special research associate professor in charge of the rails investigation at the University of Illinois, addressed the convention to point out a few of the results of the laboratory tests on shelly rails. Illustrating his discussion with lantern slides, Mr. Jensen described the rolling load tests on 17 different rails and also described several rails which had developed detail fractures from shelling in service.

Joint Bar Research—A fourth supplement to the committee report was an address given by R. S. Jensen, research assistant professor of engineering materials, University of Illinois, in which he reviewed the investigation on joint bar research. Accompanying his address with slides, Mr. Jensen described the machine used in the test, the fractures developed from the top and the bottom of bars, bar hardness, decarburization of the metal, and of the promising results from the new design of 115-lb. and 132-lb. bars.

Bridges and Trestles

C. V. Lund, Chairman*

Five progress and two final reports were submitted by this committee on its eight assignments.

Revision of Manual—The committee recommended that the Pile Record Form be reapproved with a minor revision and the addition of a note suggesting other pertinent pile record data. It also recommended that the existing Manual material under the heading of Relative Merits of Open and Ballasted Deck Wood Trestles be reapproved without change and that the material under the heading Use of Guard Rails and Guard Timbers for Wood Bridges and Trestles be deleted in its entirety and be replaced by new material under the heading Use of Guard Rails and Guard Timbers for Railway Bridges.

All of these recommendations were approved.

Classification of Lumber—Reporting that the Building Committee has prepared and is presenting new recommendations for yard grades of lumber for use in building work, this committee recommended the deletion of the material now appearing in the Manual under the title Classification of the Uses of Lumber and Timber Under A.R.E.A. Specifications. New recommendations for stress grades of lumber for bridge construction will be offered for adoption next year.

This recommendation was approved.

Design Specifications—The committee recommended that a table showing the allowable loads in pounds on one common bolt loaded at both ends, which was presented as information a year ago, be adopted for inclusion in the Manual.

This recommendation was approved.

Improved Design—After prefacing its report on improved design of timber trestles with the remark that the conclusions of a report presented in 1945 had shown that glued laminated beams, creosoted or untreated, incised or unincised, were as strong or stronger than sawed beams, the committee re-

*Assistant engineer, Chicago, Milwaukee, St. Paul & Pacific

The Committee on Wood Bridges and Trestles reported that an inspection made in October 1949 of the creosoted glued laminated stringers installed on the Southern's bridge near Alexandria, Va., disclosed the timber to be in excellent condition after four years

ported on the service tests of laminated timber caps and stringers.

Laminated stringers installed on the Texas & Pacific appeared to be in perfect condition after five years of service. Those installed on the Southern were in excellent condition after four years of service. After the same period of service, the laminated stringers of both of two installations on the Chesapeake & Ohio were found in good condition except where the top 2-in. by 8-in. member of one of the stringers showed evidence of decay which was noted to a lesser degree at the time of installation. The caps and stringers of an installation on the Southern Pacific were performing satisfactorily after four years of service.

Inspection Instructions — Last year this committee submitted a tentative draft of Instructions for Inspection of Timber Trestle Railway Bridges, consisting of a complete set of instructions describing the manner of inspecting a timber bridge, general rules and recommended practices. This year these instructions, with minor revisions, were again submitted with the recommendation that they be adopted as Manual material.

This recommendation was approved.

Statistics—In response to a questionnaire released to all Class I member railroads regarding their practices and standards pertaining to timber trestles, the committee summarized replies from 88 railroads and reported them in tabular form. This table shows track-feet of timber trestles in service, mileage of reporting roads, types of timber trestles currently used, bridge replacement policy, species of timber grading rules in use, design working stresses, kind of structural failures, and whether timber is railroad treated.

Wood Culvert Design — Under this assignment the committee prepared a tentative plan for recommended practice for the design of wood culverts. This plan was submitted for comment and criticism with the view of offering it for adoption at next year's meeting.

Fatigue Tests—J. L. Leggett, professor, University of Kentucky, supplemented the report of this committee by a discussion of fatigue tests of timber stringers that were carried out under his supervision.

Masonry

C. B. Porter, Chairman*

This committee presented reports on three of its eight assignments.

Masonry Structure Foundations—The report on this subject was presented in two parts. The first part dealt with new specifications for pile foundations which the committee recommended for adoption to replace existing material in the Manual.

This recommendation was approved.

*Assistant chief engineer, Chesapeake & Ohio

The second part of the report dealt with a description and an analysis of tests made on hollow steel and timber bearing piles in the swamps of southern Louisiana. This very extensive report was published in a previous bulletin.

Earth Pressure—The committee presented tentative specifications for the design of retaining walls and abutments with the view of offering them next year for adoption and replacement of existing Manuel material.

Improving Concrete Quality—Collaborating with the Committee on Buildings, the committee presented a report on the methods of manufacture and the control of quality of ready-mixed concrete. This is a comprehensive report that discusses the history of ready-mixed concrete, its advantages, methods of manufacture, quality of concrete, measuring of materials, allowance for surface moisture of aggregates, mixing, delivery, discharging, mixing trucks, and central mixing plants.

Prestressed Concrete—Supplementing this committee report, G. H. Paris, structural and railway bureau, Portland Cement Association, gave an address on prestressed concrete for railroad construction in which he reviewed the development, advantages and economies of prestressed concrete. He also showed a motion picture that was taken during the construction and testing of a prestressed concrete trestle slab that was tested to failure before the members of the Masonry Committee last fall.

Impact

J. P. Walton, Chairman*

Progress reports on 8 of the 10 assignments were submitted by this committee.

Viaduct Columns—Collaborating with Committee 15, this committee made an investigation of impact and stresses in the viaduct columns supporting the 70-ft. ¼-in. deck-girder spans on a viaduct of the Chicago & North Western near Jefferson, Iowa. It was reported that the bending stresses and derived eccentricities in the columns of the viaduct bents were found to be quite high, exceeding the allowance in the current A.R.E.A. design specification by a considerable amount; that the total impacts measured in the viaduct columns, as induced by both diesel and steam locomotives, were in close agreement with the design allowance; and that the maximum recorded stresses in the viaduct columns were well below the calculated stresses as caused by diesel locomotives but in close agreement for those induced by steam locomotives.

Steel Girder Spans—The committee made a report on its investigation of impact and stresses in the flanges of three girder spans on the C. & N. W. It also reported that tests were made on three more girder spans during the past season, which affords complete data on a total of 27 girder spans. Data is to be secured on two more spans in 1951, after which a final report will be presented on this subject.

*Engineer bridges and buildings, Pennsylvania

Dynamic Shear—On its assignment on tests of dynamic shear in girder and truss spans, the committee reported progress in assembling data on three girder spans on the C.&N.W. It was also reported that the dynamic shears have been measured in the web plates of all of the girder spans tested under its second assignment for investigating steel girder spans, and that progress has been made in the analysis of the assembled data.

Concrete Structures—It was reported that, in collaboration with the Committee on Masonry, tests were made during 1950 on a reinforced concrete slab having the reinforcing bars exposed on the tension side of the slab as a result of spalling of the concrete, and static strains were measured in both the concrete and the reinforcing steel on the tension side and in the concrete on the compression side. Also, during 1950, tests were conducted on two reinforced concrete trestles wherein the static and dynamic stresses were measured in both the concrete and reinforcing steel of the slabs and piles. Progress was reported on the analysis of the accumulated data from these tests, as well as from a test conducted on a prestressed concrete slab, and a report will be presented as soon as possible.

Timber Stringer Bridges—Field tests were reported made during 1950 on the stringers of a ballasted-floor timber trestle on the Chicago, Milwaukee, St. Paul & Pacific and laboratory tests were reported in progress at the Forest Products Laboratory and Purdue University to determine the fatigue strength in flexture of full-size bridge stringers. Further field tests are planned and the data will be correlated with the results of the laboratory tests.

Steel Truss Spans—Measurements of stresses in the chord and web members of three 156-ft. pin-connected deck truss pans on the Illinois Central were reported. It was also reported that stresses were measured in the counterweight truss members of a double-track bascule bridge on the Baltimore & Ohio and in the corresponding members of a triple-track bascule bridge on the C.&N.W. to determine the primary and secondary effects of the concrete counterweight during the opening of the bridge. A summary of the results of all of these tests will be published later.

Live Load Distribution—Progress was reported in analyzing the data accumulated from tests made during 1950 on six girder spans having transverse beams and two girder spans having longitudinal beams for determining the distribution of the axle

loads to these beams under both static and high-speed locomotives.

Lateral Bracing Stresses—From tests conducted on the same bridges on the C.&N.W. that were discussed under the heading "Steel Girder Spans" it was found that the stresses in the bracing members of the viaduct bent were quite low and were about the same under diesel as under steam locomotives; that the stresses in the bottom lateral bracing of the girder span with the ballasted concrete floor were larger than those recorded in the top lateral bracing; that the stresses in the end crossframe of the girder span were about the same as those in the center crossframe; that there is some indication that part of the stresses in the top and bottom lateral bracing result from the shortening and lengthening of the girder flanges; and that the stresses in the lateral bracing of a girder span with the ballasted concrete floor were appreciably lower than those in the bracing of a girder span with an open timber floor. The committee also reported that stresses in the lateral bracing of girder spans on curves will be measured.

Waterproofing

R. L. Mayes, Chairman*

A progress report on one of its three assignments was submitted by this committee.

Concrete Protection—On its assignment to investigate waterproofing protection to prevent concrete deterioration, the committee reported that tests were made to determine the waterproofing ability and durability of 72 different commercial waterproofing coatings for surface treatments. Concrete test specimens were coated with the waterproofing paints and were subjected to immersion, weatherometer, freezing and thawing, and outside weathering tests. These specimens were compared with unpainted specimens subjected to the same tests, the results of which are now being studied.

*Division engineer, New York, Chicago & St. Louis

Clearances

A. R. Harris, Chairman*

Including the revision of Manual, this committee submitted reports on three of its six assignments.

Revision of Manual—The committee recommended the addition of a note to the diagram covering unrestricted equipment clearances to point out that the 4-in. distance between the bottom of the equipment and top of rail is the absolute minimum.

This recommendation was approved.

Clearance Allowance for Wear—In collaboration with the Mechanical Division, A.A.R., the committee presented a report on clearance allowances to provide for vertical and horizontal movements of equipment due to lateral play, wear, and spring deflection. Stating that clearances of equipment on tangent tracks present no problems that have not already been solved, the committee reported on its progress on developing data for allowances to be made for wear, play and tilting due to spring deflection in addition to those for superelevation and overhang on curves. A formula for this was presented but the committee did not make a definite recommendation, pending further work on this assignment.

*Engineer of bridges, Chicago & North Western

Baltimore & Ohio clearance car

Measuring Clearances — Five methods for measuring railway clearances were reported by the committee. These included a wooden framework mounted on a push car; a graduated right-angle frame which rests on the rails, whereby vertical and horizontal measurements from the rail are taken by means of tape and plumb line; and clearance cars. The use of clearance cars on the New York Central and the Baltimore & Ohio was briefly described.

Economics of Labor

H. E. Kirby, Chairman*

One final report and three progress reports, including the revision of Manual, were submitted by this committee on its 10 assignments.

Revision of Manual—It was recommended that two additions—a kitchen-cook car and a wash-shower-toilet car—be made to the list of types of outfit cars. Typical plans for the construction and arrangement of 10 outfit cars were also recommended for inclusion in the Manual to replace existing plans.

These recommendations were approved.

Analysis of Maintenance-of-Way Operations—This year's report on the analysis of operations of railways that have substantially reduced the cost of labor required in maintenance-of-way work dealt with the use of mechanized yard-cleaning methods on the Elgin, Joliet & Eastern. The report begins with 1940 when the cleaning was confined for the most part to switching leads and was done by hand labor except for the final loading of the debris into work-train cars by a crane. Later hydraulic dump boxes were brought into use, which considerably reduced yard-cleaning costs. Then in 1949 a yard-cleaning machine was introduced which not only greatly reduced the costs, which had become inflated by increased wage rates, but made it possible to clean more trackage. This yard-cleaning machine picked the refuse and cast it in windrows between tracks, where it was picked up by a crane. But early in 1950 a power loader was used for the latter purpose and has effected even greater savings.

Organization of Forces—In a progress report the committee set forth the results of a study on the organization and practice used with the Multiple electric tamper. It was emphasized that the proper amount of ballast must be distributed in advance to conform to the raise to be made, and that in no other operation is more intensive supervision and education of the foreman required than at the unloading train. The report then discussed the practice in raising and tamping track with this machine and, omitting the forces required for installing ties and for unloading ballast, it listed the duties of a crew of 39

*Cost engineer, Chesapeake & Ohio

men, plus supervision, normally employed with the Multiple tamper.

Economies from Right-of-Way Grading—A final report was presented on the assignment to investigate economies which may be effected through the grading of the right of way. Modern earthmoving equipment has made a more complete job possible in widening and cleaning cuts, restoring embankments, constructing special drainage and interception ditches, leveling right of way to allow the transportation of employees by trucks and the use of mowing machines, and in eliminating small cuts where snow conditions made the use of equipment necessary for keeping them clear. In conclusion, the report stated that there is a definite trend toward the use of mobile earthmoving equipment and that this equipment permits greater flexibility and lower costs.

European Impressions of U. S. Railroads—As a supplement to the committee report, G. M. O'Rourke, assistant engineer maintenance of way, Illinois Central, read a manuscript on the impressions of a group of European railway maintenance-of-way officers on their tour of U. S. railroads under the auspices of E. C. A., as prepared by Arthur Dean, chief officer engineering works, the Railway Executive, British Railways, London, England. While admitting that European railways could not show any track better than the best found on railways in the United States, it was noted that our railroads have indifferent maintenance of cross level, a pronounced deficiency in curve superelevation, wide rights of way, headroom freedom for making track raises, a lack of alinement markers, a low train density, multiple tracks, high mechanization, and use of steel in bridges and buildings where concrete might be used.

Steel Structures

J. L. Beckel, Chairman*

Including the revision of Manual, this committee reported on three of its 10 assignments.

Revision of Manual—The committee submitted extensive revisions of a tentative draft presented last year of Specifications for Movable Railway Bridges, and of existing Manual material on the same subject, and solicited comments and criticisms—with the view of submitting the material next year for adoption and publication in the Manual. It also recommended some changes to existing Manual material under the heading Rules for Rating Existing Iron and Steel Bridges, and submitted new material on Blast and Fume Protection, with the recommendation that it be adopted and published in the Manual.

Both recommendations were approved.

Fatigue Tests of Beams—An advance report was presented describing and summarizing the results of fatigue tests conducted by Prof. W. M. Wilson of the University of Illinois on 27 different types of beams subjected to repeated cycles of loads. These tests indicate that (a) the carrying capacity of a rolled beam is considerably higher than that obtained with a fabricated beam of equivalent section modulus; (b) the carrying capacity of a beam with cover plates cannot be increased indefinitely with an increase in cover plate thickness; (c) the use of cover plates on rolled beams appears to be limited to reinforcement jobs where the beam is already in place; (d) cover plates on beams should be full length or extended past the theoretical cut-off point; (e) the stress-raising effect of welding across the ends of partial-length cover plates is about the same as that of the longitudinal welds along the edges of the cover plates; (f) the stress-raising effect of continuous fillet welds when used to attach cover plates to beams is smaller than that of intermittent fillet welds or rivets; (g) the carrying capacity of a beam is always reduced whenever intermediate stiffners or lateral plates are welded to the tension flanges; (h) it is impossible to splice a beam by butt welding or riveting and attain a load-carrying capacity equal to that of a continuous rolled beam of equal section modulus; and (i) it is doubtful if fatigue failures will occur in the longer girder spans.

Designing Metal Culverts—A progress report was submitted on its assignment dealing with the verification or modification of the design data in the specifications for corrugated structural plate pipe and arches as now appearing in the Manual. The committee reported that the results of field measurements are being tabulated and it is anticipated that it will soon be able to verify or modify present Manual specifications.

*Assistant engineer of structures, New York Central System

NEW YORK STATE ADOPTS TON-MILE TAX ON TRUCKS

A graduated weight-distance tax on commercial trucks weighing more than 18,000 lb. gross will become effective throughout New York state on October 1 as a result of approval by the state legislature of one of a series of administration supported bills designed to make commercial truckers pay a more equitable share of highway costs.

The new law—said to be the first of its type to be enacted in any eastern state—is modeled generally on the highway use tax in effect in Oregon. The new New York law provides for taxes ranging from 6 mills to 24 mills (2.4 cents) per truck-mile, depending on the gross loaded weight of the vehicle. Exemptions are provided for bona fide farm trucks; for government trucks; for wrecking trucks; for trucks operated exclusively within the corporate limits of a municipality or within "free zones" to be established by the state Public Service Commission; and, on return trips only, for trucks making empty return trips when the unladen weight of the truck itself is 18,000 lb. or less.

Administration of the law is vested in the state Department of Taxation of Finance. Provision is made for establishment of 50 permanent weighing stations throughout the state, and stiff penalties are provided for violation of gross weight registrations.

Passage of the bill, by votes of 51 to 3 in the state senate and 90 to 47 in the assembly, followed publication early last year of the so-called Griffenhagen report, which showed that passenger automobiles in New York state were then paying, in license and gasoline fees, between four and five times as much as heavy trucks. (See *Railway Age* of March 4, 1950, page 59.)

Efforts of truck lobbyists to defeat the bill were sharply criticized by Governor Thomas E. Dewey just prior to its passage. Owners of big trucks, the governor said, are paying "practically nothing" for the enormous damage they do to highways. "Yet this bill is being opposed by a powerful, highly organized lobby, devoted exclusively to preserving this extreme preference now enjoyed by the biggest trucks. This lobby is infesting the halls of the legislature and putting pressure upon individual legislators at their homes."

On March 9, just after the bill was enacted, H. W. Dodge, executive vice-president of Mack Trucks, Inc., told a press luncheon in New York that "open warfare by the railroads against the trucking industry" and railroad attempts "to restrict and strangle truck transportation" are "taking their toll of national security." Saying that his purpose was to see "if there is a healthy chance for peace," Mr. Dodge declared he did not know why the railroads are engaging in what he called "open warfare."

Meantime, measures calling for increased taxation of heavy trucks are reported to be under consideration in the legislatures of other states.

GENERAL NEWS

I.C.C. Authorizes 2.4 Per Cent Interim Freight-Rate Increase

Report in Ex Parte 175 approves advances which will yield about $205 million a year; railroads sought raise of 6 per cent

Increases in freight rates and charges, which are expected to yield approximately $205 million a year, were authorized by the Interstate Commerce Commission in a March 12 report on the interim-relief phase of the Ex Parte 175 proceeding. Averaging about 2.4 per cent overall, as compared with 6 per cent sought by the railroads, the increases generally will be 4 per cent within Eastern territory, 2 per cent within Southern and Western territories, and 2 per cent interterritorially between the three territories.

The commission's report authorized publication of the increases on 15-days' notice; and the railroads are trying to get the necessary tariffs prepared and filed in time to make April 3 the effective date.

The report also authorized intervening water carriers and freight forwarders to publish like increases. The new rates will remain in effect until the commission passes upon the carriers' basic petition in the proceeding for authority to make a permanent advance of 6 per cent.

Decision Was Unanimous

The 20-page decision, dated March 12, as noted above, was made public March 14—the 13th day after submission of the case with the close of oral argument on March 1 (See *Railway Age* of March 12, page 89). It was an unanimous decision in which all members of the commission participated, and the only separate expression was a brief "concurring" statement by Commissioner Aitchison.

The report did note, however, that the panel of state commissioners, who sat in the case and participated in the commission's conference, had "recommended against an interim increase and suggested early completion of the hearings on the main petition of the carriers."

It was the wage increase involved in the March 1 agreement with non-operating employees which prompted the commission to grant the interim relief. As noted in *Railway Age* of March 5, page 59, that wage increase was 12½ cents per hour, retroactive to February 1, while other phases of the "non-op" settlement included an escalator clause providing for cost-of-living increases computed quarterly.

The commission referred to carrier estimates indicating that the 12½-cent raise would increase wage costs by approximately $292 million. "The conclusion is clear," the report also said, "that without giving consideration to the increased cost of the agreement with the non-operating employees petitioners have not justified an immediate increase in their rates and charges."

The "non-op" settlement was announced on the closing day of the oral argument which the commission heard on the interim-relief proposal. Thus the settlement was not formally before the commission as evidence, but was called to its attention by the carriers' chief counsel—E. H. Burgess, vice-president of the Baltimore & Ohio—as he summed up at the close of his argument.

That situation was noted by the commission, but it went on to say it was "of the opinion . . . that we should take notice of the effect of the . . . agreement because its basic provisions have become operative." It was this commission decision to take "official notice," as it said later, of the "non-op" settlement which drew from Commissioner Aitchison the separate expression in which he was "concurring specifically."

"I am of the opinion," Mr. Aitchison said, "that the 'Wage Settlement with Non-Operating Employees' is not properly before us, as within the scope of the issue presented by the motion [for interim relief], or as a matter of evidence. Therefore, I would not give it weight in determining the measure of interim relief to be accorded, but would reserve judgment as to what weight should be given the 'settlement' until that issue has been presented and heard. Otherwise, I concur in the conclusion."

The estimate that the annual yield from the authorized increases would be approximately $205 million is a carrier estimate made shortly after the decision was issued at noon on March 14. Late on the afternoon of that day, the commission's acting secretary, G. W. Laird, issued a notice summarizing the decision and making estimates of yield on the basis of 1951 traffic estimates of record.

The traffic estimates, Mr. Laird said,

THE FEDERATION FOR RAILWAY PROGRESS and Mrs. Alben W. Barkley, wife of the Vice-President of the United States, honor Pullman Porter Albert J. Lively of Louisville, Ky., as "Railroad Man of the Year." The annual Railway Progress employee award, consisting of a gold medal and a $100 savings bond, is presented to a railroad employee who has distinguished himself in rendering continuous outstanding service and courtesy to the traveling public. It was Mrs. Barkley's commendation which won Porter Lively the award over 11 other monthly award winners and she was present to do the honors. From left to right, above, are Thomas J. Deegan, Jr., president of the federation, Walter J. Tuohy, member of the executive council of the federation and president of the Chesapeake & Ohio, Mrs. Barkley, and Porter Lively

JAPANESE EXPRESS TRAIN, hauled by an EF-57 type electric locomotive, near Atami on the Tokaido line between Tokyo and Kobe

"varied widely, from a low of 620 billion ton-miles advanced by the railways to a high of 687 billion ton-miles." The authorized increases "should amount to between $194 million in freight revenue annually for the low estimate to $219 million for the high, under the assumption that intrastate increases will follow the same pattern as the interstate," Mr. Laird added.

Range of Increases

"By districts," he continued, "the annual increases should range between $92 million and $108 million in Eastern district, from $14 million to $16 million in the Pocahontas region, $22 million to $25 million in the Southern region, and between $66 million and $70 million in the Western district. Estimated percentage increases over basic rates at the present time, giving effect to the so-called 'hold-downs' and exceptions, are 2.4 per cent for the United States, 3 per cent in Eastern district, 2.5 per cent in Pocahontas region, 2 per cent in Southern region, and 1.9 per cent in Western district."

The "hold-downs" and exceptions operate to limit the application of the general percentage increases. As set out in the commission's report, the "hold-downs" will limit to 2 cents per 100 lb. the increases on fresh fruits (including citrus fruits), fresh vegetables, melons, lumber and articles listed in tariffs as taking lumber rates, sugar, and canned or preserved food products. Increases on grain, grain products, grain by-products, and articles taking the same rates, will be limited to 2 per cent "to, from, and within all territories."

Rates on anthracite and bituminous coal, with exceptions, may be increased 2 per cent, subject to a maximum of 6 cents per net ton or 7 cents per gross ton. Where coal moves over rail-water routes, the aggregate amount of the rates or rate factors subject to commission jurisdiction "shall be considered as the rate to be increased, and be subject to a single increase."

First of the exceptions stipulates that the increase in rates on coal to East St. Louis, Ill., and Alton, when for movement beyond by barge to points on the Mississippi river, "shall not exceed 3 cents per net ton or 3.5 cents per gross ton from Illinois and western Kentucky mines, exclusive of dumping and switching charges." Another exception provides that the increase in rates on coal and coke to North Atlantic ports, Hampton Roads-New York, inclusive, when for movement by water to New England ports, thence by rail or barge to the interior, "shall not exceed 3 cents per net ton or 3.5 cents per gross ton, and the increase in the rates on such coal from said New England ports to the interior shall likewise not exceed 3 cents per net ton or 3.5 cents per gross ton."

As to lignite coal, or lignite coal briquettes, the authorized increase is 2 per cent, subject to a maximum of 3 cents per net ton or 3.5 cents per gross ton.

As to iron ore, it will take the general percentage increases—except that no increase is authorized in the line-haul rates on iron ore to upper Great Lakes ports for transshipment by water, or from Minnesota ranges to Duluth, Minn. The carriers proposed no increase in charges for storing iron ore at lower Great Lakes ports, so the commission authorized none.

Meanwhile carrier proposals to increase charges for handling iron ore at both upper and lower lake ports were rejected by the commission. Likewise rejected was the proposal to apply the percentage increases to charges for protective service.

The commission did, however, approve application of the general increases to various other services, including the transportation of milk and cream in passenger and freight service; collection and delivery; switching, trap and ferry car services; crane service; diversion and reconsignment; stopping in transit; and operation of special freight trains.

Also taking the general percentage increase will be minimum charges; all-commodity rates; and line-haul rates on freight in truck bodies, trailers or semi-trailers on flat cars. While rates on import, export, coastwise and intercoastal traffic, and joint rates with ocean, lake and inland waterways carriers, will take the same increases as the "domestic rates," such authorizations are "with the understanding that such rates will be later revised to restore differentials." Likewise all class rates will take the percentage increases initially, and the relationships of the classes will be restored later.

Charges for demurrage on freight cars will not be increased. And neither will allowances paid by railroads for drayage or other services performed by shippers or receivers of freight. There will be no increase in wharfage, handling or tippling charges at South Atlantic, Florida, and Gulf of Mexico ports. Charges for loading and unloading livestock will not be increased; but charges for loading and unloading carload freight generally will take the percentage increases. So also will charges for various accessorial and terminal services, such as storage, lighterage, floatage, demurrage on lighters or car floats, weighing, etc.

In reaching its conclusion that the carriers had not justified a grant of interim relief until the "non-op" settlement came along, the commission considered evidence indicating that "a substantial portion of the increases in prices of fuel, materials and supplies to which petitioners called our attention was encountered by them in 1950 and reflected in their earnings for that year which were not, on the whole, unfavorable."

Must Consider Future Needs

The commission recognized that it "must consider the future needs of the petitioners for increased revenues to enable them to provide an adequate transportation service." It added, however, that "this need is to be weighed in the light of the other substantive requirements of the law that rates shall be just and reasonable to the public and, in the present situation, that no unnecessary obstacle be thrown in the way of the efforts of the government to stabilize prices and the cost of living."

"These increased costs," the report continued, "are not being encountered by petitioners on a declining or even stabilized volume of traffic. Obviously, such costs will be compensated in some

measure at least by the present upward trends in traffic volume and in total earnings if they should continue for a reasonable length of time. Our task is to evaluate all these elements as accurately as the circumstances will permit . . . "

Explaining why it authorized a larger increase in Eastern territory, the commission said it was "clear that the impact of increased costs had fallen with more severity" on the carriers in that territory. This, the report added, "is being reflected in the rates of return of the [eastern] carriers and in their operating ratios."

Knudson Would Ease State Truck Rules

D.T.A. administrator tells governors to act, or else . . .

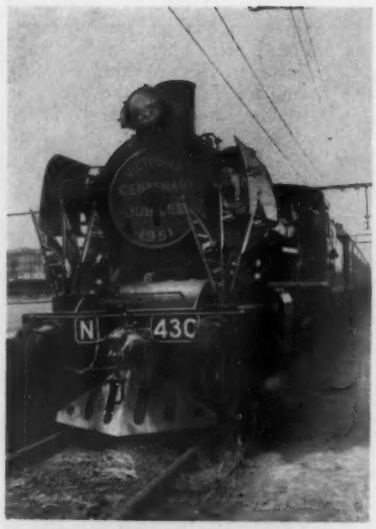
Governors of the 48 states have been called upon by Defense Transport Administrator James K. Knudson to cooperate with him in bringing about the elimination of "unjustifiable highway transport barriers." The call was embodied in a March 8 letter which also carried a threat warning the governors that their failure to "cooperate effectively" would be "an invitation to elements in the federal government to take the lead in bringing about uniform standards."

What Mr. Knudson wants to get rid of is what his letter called "restrictive state limitations on the sizes and weights of highway transport vehicles, and lack of reciprocity covering their operation between the several states." Those conditions, he said, "are materially reducing the load capacities of our transport facilities and preventing their full utilization in the defense effort."

Specifically, Mr. Knudson advocated that all states permit truck sizes and weights which conform to the "thoroughly sound" standards advocated by the American Association of State Highway Officials. At the same time, he emphasized that it should be "clearly understood" that the A.A.S.H.O. code "should be adopted as a minimum standard only."

"It is my earnest request," the D.T.A. administrator said, "that there be no reduction of existing size and weight standards in any state, even though the present limits may be above the code specifications. The Defense Transport Administration must seek to broaden, rather than reduce the size and weight provisions, wherever it is sound to do so."

Mr. Knudson, so he said, was "fully cognizant of the importance of protecting, insofar as possible, our fine system of interstate highways, our secondary roads and bridges." Thus, he insisted, he was "not advocating overloading of vehicles, or any step which could be construed or could have the effect of breaking up our highways." He added that there should be "careful policing of highway transportation to prevent excessive loads."



THIS CENTENARY-JUBILEE TRAIN is making a five-month tour of the state to celebrate the 100th anniversary of government and of the discovery of gold in Victoria (Australia). Its new N class locomotive and 11 cars are specially painted in green and gold; the cars carry exhibitions of art, historical manuscripts, models of post-war government development projects, and Australian armed forces displays. The exhibition staff uses a second special train

Later on in his letter, however, the D.T.A. administrator "earnestly" requested the governors' cooperation on several matters, including the issuance of instructions to state enforcement officers to "eliminate costly and unwarranted delays incident upon routine weighing and inspection of highway transport vehicles," and the provision of "reasonable tolerances in the loading and scaling of highway transports to the end that this essential defense transportation may move freely and expeditiously among the several states."

"Unjustifiable state limitations . . . and restrictions intended to harass and burden highway transport to obtain competitive advantages for other modes of transportation, cannot be tolerated in times of national emergency such as this, nor can they be permitted to impede our gigantic defense effort," Mr. Knudson also asserted. He added that the country "will require the full utilization of all of our transport facilities to meet the unprecedented demands being placed upon all modes of transportation at this time."

In the latter connection, the D.T.A. administrator had previously referred to the "unprecedented" shortage of freight cars and the "overburdened" highway transport system—conditions which are leaving "thousands of pounds" of freight "unmoved on loading docks." He also recalled that arrangements similar to those which he was proposing were entered by the states with the former Office of Defense Transportation during World War II.

January Net Income Totaled $56 Million

Net railway operating income for month was $77,690,911

Class I railroads in January had an estimated net income, after interest and rentals, of $56 million, compared with $13.5 million in January 1950, according to the Bureau of Railway Economics of the Association of American Railroads. The January net railway operating income, before interest and rentals, was $77,690,911, compared with $32,796,005 in January 1950.

For the 12 months ended with January the rate of return was 4.4 per cent, as compared with 2.85 per cent for the 12 months ended January 31, 1950. Meanwhile, however, 17 Class I roads failed to earn interest and rentals in January. The group included seven roads in the Eastern district, one in the Southern region, and nine in the Western district.

Gross in January amounted to $848,728,726, compared with $657,044,949 in the same month of 1950, an increase of 29.2 per cent. Operating expenses amounted to $645,246,272 compared with $546,660,531, an increase of 18 per cent.

Class I roads in the Eastern district in January had an estimated net income of $20,000,000, compared with $7,000,000 in the same month of 1950. Those same roads in January had a net railway operating income of $31,658,169 compared with $16,800,269.

Gross in the Eastern district in January totaled $380,536,238 an increase of 27.9 per cent compared with the same month of 1950, while operating expenses totaled $299,814,519 an increase of 20.2 per cent.

Class I roads in the Southern region in January had an estimated net income of $11,000,000, compared with $7,000,000 in the same month of 1950. Those same roads in January had a net railway operating income of $13,736,218, compared with $9,930,681.

Gross in the Southern region in Jan-

CLASS I RAILROADS—UNITED STATES
Month of January

	1951	1950
Total operating revenues	$848,728,726	$657,044,949
Total operating expenses	645,246,272	546,660,531
Operating ratio—per cent	76.03	83.20
Taxes	109,414,627	64,077,602
Net railway operating income (Before charges)	77,690,911	32,796,005
Net income, after charges (estimated)	56,000,000	13,500,000

uary totaled $124,787,900, an increase of 25.3 per cent above January 1950, while operating expenses totaled $91,839,610, an increase of 17.8 per cent.

Class I roads in the Western district in January had an estimated net income of $25,000,000, compared with a deficit of $5,000,000 in the same month of 1950. Those same roads in January had a net railway operating income of $32,296,524, compared with $6,065,055.

Gross in the Western district in January totaled $343,404,588, an increase of 32.1 per cent above January 1950, while operating expenses totaled $253,592,143, an increase of 15.6 per cent.

Labor Wants What It Wants—Loomis

Procedures producing less are considered "failures"

Daniel P. Loomis, chairman of the Association of Western Railways, last week told the Senate committee on labor and public welfare that leaders of the four brotherhoods representing railroad operating employees have taken, in effect, a position which holds that "unless we get what we want, collective bargaining, the Railway Labor Act and all orderly processes of law are failures." The statement was part of the presentative made by Mr. Loomis at the March 12 and 14 sessions of hearings in connection with the committee's investigation of the failure to settle the "op" wage and rules disputes.

Mr. Loomis is chairman of the western carrier's conference committee, one of the three regional groups representing railroad managment in the wage and rules cases. His appearance before the committee followed those of the "op" leaders and members of the National Mediation Board. (See *Railway Age* of March 5, page 60, and March 12, page 89.)

What It Amounts to

The testimony of the "op" leaders, Mr. Loomis said, amounts to this:

"First, if the carriers do not give us what we want in direct negotiations, they are not carrying out collective bargaining in good faith.

"Second, if the carriers do not give us what we want in mediation, they are guilty of stalling and still are not bargaining in good faith.

"Third, if we, the union leaders, refuse to arbitrate, it is because we fear we may not be able to justify what we want before an arbitration board and if an arbitration board did not give us what we want, it would prove that the arbitration provisions of the Railway Labor Act are of no value.

"Fourth, if a board appointed by the President of the United States to investigate our dispute fails to recommend what we, the union leaders, want, the board members are incompetent or biased or, at best, fail to understand our problems and the realities of the situation.

"Fifth, if, after all these steps, we still do not get what we want and we threaten to tie up the transportation system of the nation, whether in war or peace, and the government prevents us from doing so by seizing the railroad transportation system, then it is the obligation of the government to see that we get what we want."

It is because of this attitude that the railroads "have reluctantly come to the conclusion that arbitration is the only way out as a final step," Mr. Loomis also said. He insisted that the carriers would like to settle wage and rules cases "across the bargaining table," but the attitude of the unions "makes that impossible."

FOR A PERFECT SAFETY RECORD, with no reportable injuries during 1950, the Stores department of the Missouri-Kansas-Texas received President Donald V. Fraser's safety award on March 8. C. E. Reasoner, general storekeeper, looks on (left) while Gene Stringer, representing the department, accepts the award from M. R. Cring, assistant to the president—public relations. B. A. McDonald, superintendent of rules and safety, is beside Mr. Cring

Car Surpluses and Shortages

Average daily freight car surpluses and shortages for the week ended March 10 were announced by the Association of American Railroads on March 15 as follows:

	Surplus	Shortage
Plain Box	0	26,623
Auto Box	7	355
Total Box	7	26,978
Gondola	15	4,980
Hopper	220	1,566
Covered Hopper	0	70
Stock	668	0
Flat	0	1,404
Refrigerator	135	1,782
Other	131	52
	1,176	36,832

New York Area Transport Study Urged by Reid

Inauguration of a study by the governors of New York and New Jersey of what need to be done to coordinate, extend and modernize mass transportation systems in the two states was urged by William Reid, president of the Hudson & Manhattan and former chairman of New York City's Board of Transportation, in the H.&M.'s recently released annual report for 1950. The study, he said, "should also determine what steps are required to relieve congestion at Grand Central and Pennsylvania stations. Such studies should be made in cooperation with New York City officials, as it is advisable and desirable to provide easy interchange between the city subway system and the Long Island . . . as well as the railroads from the north and west." Mr. Reid urged also that New York City's current plans for a new $500,000,000 subway be integrated with the overall solution to avoid unnecessary delay and additional cost.

"Transportation in metropolitan New York [Mr. Reid said in part] is a conglomeration of railroads, subways, bridges, tunnels and highways; of trains, buses, taxis and automobiles—all valiantly but vainly endeavoring to satisfy the ever-increasing demands of the world's greatest city. . . In New Jersey there is no integrated mass transportation system. . . New York City officials more than 50 years ago had vision enough to start building a vast mass transportation system within the city. But officials outside the city in the metropolitan area left mass transportation to various and sundry railroads. None of these railroads took advantage of bus feeder lines. So instead of building up and improving mass transportation facilities to comfortably carry passengers to the city, the railroads, under the competitive pressure of tax exempt bridges and tunnels, have been slipping fast. Some have disappeared entirely.

"A 10-car subway train during rush hours carries 1,600 passengers and is operated by 3 men. It would require 25 buses, with 25 drivers, to carry the same number of passengers. Buses during rush hours carry an average of 65 passengers. Automobiles, carrying anywhere from 1 to 6 persons in a car, average 1.7 persons on

weekdays and 2.2 on weekends. The roads over which they run were built and are paid for out of public funds. Tolls ranging from 10 cents to 50 cents are charged for use of the bridges, tunnels and some parkways. However, no portion of these receipts is paid to the political subdivisions which built the connecting highways without which these bridges and tunnels could not be the financial success they are. It is evident that commuter travel on rubber, inherently inefficient and costly, can never provide an adequate solution to the mass transportation problem."

No one can estimate precisely what the total cost of coordinating, modernizing and extending mass transportation facilities in the New York metropolitan area will be, the H. & M. president said, adding that:

"Some authority should be utilized or established by the states of New Jersey and New York, with specific mandate to combine, rehabilitate and expand existing commuter rail facilities, including terminals in these states. . . Time is an important factor. It may well be that new tunnels must be built. . . Construction of new tunnels will require many years and entail tremendous cost. But it should not take more than two or three years—if defense efforts do not prevent it—to provide joint facility transfers in New York and New Jersey, at a convenient point, to consolidate, expand and modernize existing facilities. However, the overall job will take from eight to ten years, at least, so immediate action is required by those with authority to get the work done."

Mr. Reid also announced that the H. & M. will appeal the New Jersey Board of Public Utilities Commissioners' recent refusal to allow a 5-cent increase in the road's fare between stations in Hudson county, N. J. The road also will ask Interstate Commerce Commission approval to have its trans-Hudson river fare raised from 15 to 20 cents.

Teamsters Will Oppose Rogers For Commissioner

Hearings on the reappointment of Commissioner John L. Rogers to the Interstate Commerce Commission began March 14 before the Senate interstate and foreign commerce committee. No opposition to the nomination was expressed at the opening hearing, but further sessions are scheduled for March 28-29 at which time the International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers is expected to oppose the nomination.

Senator Johnson, Democrat of Colorado and chairman of the interstate committee, read a letter from Edward K. Wheeler, attorney for the brotherhood. Mr. Wheeler, who is the son of former Senator Burton K. Wheeler, said the union would oppose the reappointment of Commissioner Rogers. He said that because of prior engagements and the fact that some witnesses would have to come from out of the city, the union would like an opportunity to be heard on March 28-29. The hearing was recessed until that date.

Appearances at the March 14 session were made by Commissioner Rogers, and by 16 others who testified in his support. Senator Johnson said the committee had received 53 telegrams and 22 letters supporting the commissioner's nomination, as against 37 telegrams and one letter in opposition. In addition to favorable letters from both senators from Tennessee, Commisioner Rogers' home state, another was received from Senator Robertson, Democrat of Virginia. The opposition, Senator Johnson said, was principally from members of teamster union locals in southern California. A letter supporting Commissioner Rogers was received from W. P. Kennedy, president of the Brotherhood of Railroad Trainmen.

Senator Johnson's Queries

During the commissioner's appearance before the committee, Senator Johnson asked a number of questions on the manner in which the I.C.C. grants motor carrier certificates. Mr. Rogers, as administrative head of the Bureau of Motor Carriers, is also a member of the commission's Division 5, which generally exercises authority over motor carrier activities. The senator's questions reflected a concern that operating certificates are sometimes granted to truckers in "willy-nilly" fashion, without due regard to the effect of such certificates on existing carriers.

The senator also raised questions about the I.C.C. being "compartmentalized"—i.e., doing its work by divisions rather than by the entire commission. He said he is "very dubious" of a system in which "the right hand doesn't know what the left hand is doing," and said he has wondered whether one type of transportation might be given an advantage to the detriment of another when divisions operate independently of each other.

Commissioner Rogers denied that applications for motor carrier certificates are approved indiscriminately, and said that Congress itself granted 89,000 such certificates under the so-called "grandfather clause" when it passed the motor carrier act.

Asked to comment on "the commission generally and your hopes for the future," Commissioner Rogers told the committee that he is "not at all satisfied with the sort of job we are doing in the Bureau of Motor Carriers." He said Congress has never granted enough money "to finance the sort of organization we should have," and added that he is "very much dissatisfied" with what has been done to promote safety. He said the bureau has about one-third more men for enforcement work than the state of Rhode Island.

Among those who testified on the commissioner's behalf were R. Granville Curry, chairman of the Standing Committee on I.C.C. Appointments, Association of I.C.C. Practitioners; John V. Lawrence, managing director, American Trucking Associations; Giles Morrow, executive secretary and general counsel for the Freight Forwarders Institute; John P. Randolph, general solicitor, National Association of Railroad and Utilities Commissioners; Edward F. Lacey, executive secretary, National Industrial Traffic League, and Jack Scott, general counsel for the National Association of Motor Bus Operators.

These witnesses urged Senate confirmation of Commissioner Rogers' reappointment, testifying as to his integrity, honesty and ability. They said a man of his experience should be retained on the commission, and one witness commented that if he is not confirmed "Lord only knows who we might get."

Commissioner Rogers' reappointment to the I.C.C. was forwarded to the Senate by President Truman on February 12. It would be his third term on the commission, his most recent term having expired December 31. The new appointment is for a term expiring December 31, 1957.

When "DO-97" May Be Extended by Suppliers

Suppliers of maintenance, repair and operating materials may not use DO-97 ratings to build inventories in anticipation of DO-97 orders they expect to receive. This has been explained by the National Production Authority.

As noted in *Railway Age* of March 12, page 95, the N.P.A. recently authorized industry to use the "DO-97" rating to acquire maintenance, repair and operating supplies. After referring to "indications that some businesses have misinterpreted" the regulation involved (NPA Regulation 4), the N.P.A.'s explanatory statement went on to quote the regulation's section 2(h) which reads as follows:

"Products used for 'MRO' (or materials required for incorporation in such products) shall not be deemed 'MRO' as to the producer of such products even though he sells them for use by others as 'MRO.' However, when he receives rated orders for such products, he may extend the rating to get materials to be incorporated in the products. Materials or products sold by a distributor thereof for use by others as 'MRO' shall not be deemed 'MRO' as to such distributor but, when he receives rated orders for them, he may extend the rating to get them."

Broken Rail Derails Train: Three Dead

A broken rail in a railroad crossing in Trenton, Mich., a few miles outside of Detroit, caused derailment of New York Central train, 309, the "Ohio Special," and resulted in the death of three passengers and injuries to 63 others. Nine of the injured are said to be in serious condition.

At the time of the accident the train was reported to be traveling at a relatively low rate of speed. Two of the derailed passenger cars turned over on their sides while three others, including one baggage car, remained upright. Although hampered by a storm of mixed rain and snow, police and

CHALKING UP PULLMAN-STANDARD'S 25,000TH "PS-1" BOX CAR, A. A. Logmann, manager of works, mounts a ladder to emphasize the number of "package design" cars which the builder has produced since its first went to the Lehigh Valley in June 1947. Beneath Mr. Logmann (and apparently unconcerned with superstition) are Paul Behn, plant superintendent, and Ray Shaver, chief mechanical officer, of Pullman-Standard's freight car plants. On the extreme right is Gene Gardner, chief inspector of freight cars for the New York Central, who took delivery of the car following the brief ceremony

other rescue workers were able to get all the injured to nearby hospitals within two and one-half hours of the time of the accident.

The N. Y. C. told *Railway Age* that the crossing on which the derailment occurred was not maintained by them. There are two main tracks in service at Trenton and operations continued on the second track which was not blocked. The "Ohio Special", is an overnight train from Detroit to Cincinnati, Ohio. It carried through sleeping cars for Florida points which continue on the Southern's "Royal Palm."

Forget Speed in Favor Of Safety, Mitchell Says

Interstate Commerce Commissioner Mitchell is "convinced that the time has arrived when the railroads of America must forget about the speed of operation and think more of protecting the passengers."

The commissioner expressed this view in a concurring opinion to a recent report wherein Division 3 denied a petition of the Minneapolis, St. Paul & Sault Ste. Marie for relief from certain of the commission's signaling requirements.

"Speed has been the cause of most of the railroad accidents which have shocked the American people," Commissioner Mitchell said. "Safety is more important than speed and to protect the public, the Interstate Commerce Commission should limit the speed of passenger trains so that these horrible accidents which are so frequent now, will be eliminated."

The division's report in the proceeding was by Commissioner Patterson, with a dissent by Commissioner Knudson. Commissioner Mitchell is not a regular member of the division, but was serving as a substitute member in this case.

The road had requested authority to operate without prescribed automatic or manual block signal systems between Glenwood, Minn., and Noyes, approximately 266 miles, and between Spencer, Wis., and Withrow, Minn., approximately 142 miles. Over the former route the road asked permission to operate its passenger trains at 60 m.p.h., while over the latter it sought permission to operate passenger trains at 65 m.p.h. and freight trains at 55 m.p.h. Standing I.C.C. orders require that block signal systems be installed on lines where any passenger train is operated at a speed of 60 or more m.p.h. or any freight train at a speed of 50 or more m.p.h.

The road said installation of the safety devices would cost $878,790 for the Glenwood-Noyes line, and $468,600 for the Spencer-Withrow line.

In another signaling case decided recently, Division 3 granted the Chesapeake & Ohio and the New York, Chicago & St. Louis conditional authority to operate freight and switching locomotives between Erie Junction at Hammond, Ind., and Pullman Junction at Stony Island, Ill., without train stop devices. The distance involved is about 8 miles, and is all within the yard limits of Stony Island.

Division 3 noted that the line is subject to yard rules and said safety of operation will not be materially reduced if freight and yard locomotives operated over the line are not equipped with train stop devices, provided that all trains and locomotives are operated over the line at restricted speed as that term is defined in the commission's "Rules, Standards and Instructions for Signal Systems."

"Slowdown" on Railroad To Close Steel Plant

A continuing labor "slowdown" on the Monongahela Connecting has resulted in a decision by the Jones & Laughlin Steel Corp., the nation's fourth largest steel producer and owner of the railroad, to close its Pittsburgh, Pa., works. The slowdown by the railroad workers is reported to stem from a demand by members of the Brotherhood of Railroad Trainmen for an hourly wage increase of 35 cents.

D.&R.G.W. Now Says U.P. Seeks to "Embarrass" I.C.C.

The Denver & Rio Grande Western has told the Interstate Commerce Commission that the recent pleading of the Union Pacific in the Ogden Gateway case is a "scurrilous and insulting" petition, with its only aim and purpose being "to embarrass and influence the commission."

The U.P. petition to which the Rio Grande referred was filed with the commission February 20. It accused the chairman of the Senate Interstate and Foreign Commerce Committee—Senator Johnson, Democrat of Colorado—of "attempting to influence" the I.C.C. to adopt the examiner's proposed report in the gateway case. That report, which is now before the commission for consideration, recommends that the gateway at Ogden, Utah, be forced open. (See *Railway Age* of February 26, page 46.)

The U.P. asked that the record in the case be reopened for the purpose of receiving in evidence a speech which Senator Johnson made on January 27 over radio station KFEL at Denver, Colo. In replying to the U.P., counsel for the Rio Grande asked the commission not to entertain the U.P. petition, or, if it did, to deny it.

"It is doubtful if in the history of the commission a lawyer has been faced with the task of replying to such a scurrilous and insulting formal pleading as is the petition of the Union Pacific," the Rio Grande counsel said. "That petition recklessly insults the members of the commission, Senator Johnson, and the officers of the Rio Grande."

The Rio Grande denied that it had at any time called the attention of the commission to the speech. It said the U.P. "in a sly manner" suggested that the Rio Grande would see to it that the senator's speech came to the attention of the I.C.C. "informally or otherwise."

Asserting that no representative of the Rio Grande "has ever asked Senator Johnson to make a speech or

take any other action with respect to this proceeding," the D. & R. G. W. quoted a telegram which the senator sent to the Rocky Mountain News on February 21, as follows:

"Neither Wilson McCarthy, president of the Rio Grande, nor any one else for the Denver & Rio Grande Western has ever asked me to make a public statement regarding the Ogden gateway. However, Denver radio station KFEL did ask me if in my opinion Colorado shippers are entitled to through rates through Ogden and I said so."

In concluding its reply, the Rio Grande declared that "for more than 60 years this commission has stood four square to every wind that blows, confining its activities within the four corners of the law of its creation." Despite the "reprehensible aims" and "unwarranted insinuations" of the U.P. petition, the Rio Grande said, "the long tradition of the commission for independence, courage and integrity is a guarantee that it will not be swayed from the performance of its duty in the instant proceeding . . . but will dispose of the issues of the case on their merits."

New Wage Agreement On Canadian National

The Canadian National has announced a new agreement with certain classes of employees which embraces rule changes and increases in wage rates averaging 4½ cents an hour.

The railway said negotiations had been successfully concluded with committees representing the Brotherhood of Locomotive Firemen & Enginemen, the Order of Railway Conductors and the Brotherhood of Railroad Trainmen, governing services of locomotive firemen, helpers, hostlers, hostlers' helpers, conductors, trainmen, switchtenders, yardmasters and assistant yardmasters, all of the Central and Atlantic regions, and including all employees in engine, train and yard service of the Newfoundland district.

The revised wage rates are effective from December 1, 1950, and the changes in rules from April 1, 1951. The contract covering both wages and rules is for one year from April 1.

January Employment

Railroad employment decreased 1.86 per cent—from 1,277,058 to 1,253,379—from mid-December to mid-January, but the mid-January total was 8.87 per cent above that of January, 1950, according to the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission.

The index of employment, based on the 1935-1939 average as 100, was 127.7 for January, compared with 127.1 for the previous month and 117.3 for January, 1950.

January employment was below that of the previous month in four of the seven groups, the range of decreases being from 7.52 per cent in the maintenance of way and structures group to 0.05 per cent for the group embracing executives, officials and staff assistants. Increases in the other three groups were all less than one per cent.

As compared with January, 1950, employment increased in all groups. The increases ranged from 14.29 per cent for the maintenance of way and structures group to 0.84 per cent for the group embracing executives, officials and staff assistants.

New G. N. Streamliner to Bear Name "Western Star"

The Great Northern has announced selection of the name "Western Star" for its new transcontinental streamliner scheduled to go into service between Chicago and Seattle-Portland about June 1. The "Western Star" will be operated as a companion train to the road's premier "Empire Builder," which is presently being completely re-equipped with new cars. The "Western Star" will utilize displaced "Empire Builder" streamlined equipment plus enough new cars to round out the consist of an additional train set which the schedule will require.

The new train will replace the G.N.'s "Oriental Limited." The latter name first appeared on a G.N. transcontinental train in 1905 and was continued until 1931. It was revived in 1947 when the "Empire Builder" went on its present accelerated schedule with new streamlined equipment and the need for a second train for transcontinental service was again indicated. With the re-equipping of the "Empire Builder" and introduction of the "Western Star," the G.N. will become the first of the so-called northern transcontinentals to offer double-daily streamlined service from Chicago to the Pacific Northwest.

Chicago, Aurora & Elgin Strike Ends After 41 Days

Trains on the Chicago, Aurora & Elgin began running again on March 11 after all services of the 65-mi. road had been halted for 41 days by strike action. The strike involved 95 employees who are members of the Brotherhood of Railroad Signalmen of America, the Order of Railroad Telegraphers and the Brotherhood of Railway & Steamship Clerks, who won a settlement of their demands for 48 hours pay for 40 hours work. Some 430 other employees of the road were made idle by the walkout. Three other non-striking unions—the Brotherhood of Railroad Trainmen, the Brotherhood of Locomotive Firemen & Enginemen and the Amalgamated Association of Street, Electric Railway & Motor Coach Employees of America — also were covered by the final settlement of the basic strike issues.

General Manager Frank W. Flannigan said full services would not be restored for several days due to the need to inspect all equipment for possible damage by severe weather conditions encountered during the strike. He estimated that the strike cost the railroad some $400,000 in revenues and that the idled employees, in turn, lost about $250,000 in wages.

During the strike, the railroad was granted a temporary increase in weekly and monthly commutation fares of 12½ per cent and a permanent increase of 25 per cent is currently under consideration by the Illinois Commerce Commission. In 1950 the road sustained an operating loss of $309,000 and a net loss of $86,000. The fare increases, if granted in full, would bring in an estimated additional $100,000 annually in revenues, in contrast to the $300,000 which the strike settlement has be n estimated to cost.

The C.A.&E.'s plight has been compared to that of the Long Island. The Chicago line is primarily a passenger carrier and a large portion of its passengers travel on reduced fare commutation tickets. Only 8 per cent of its income is derived from freight services.

Bus Group's Bulwinkle-Act Pact Effective April 2

The rate-procedures agreement filed under the Bulwinkle-Reed Act (section 5a of the Interstate Commerce Act) by some 300 common-carrier bus operators as members of the National Bus Traffic Association will become effective April 2. Division 2 of the Interstate Commerce Commission so stipulated in a recent order approving an amendment which the division's May 26, 1960, report required in connection with its approval of the pact.

The amendment was designed to insure that any common-carrier bus operator would be admitted to membership in the association as a right, and upon the same terms as the original members. The case was docketed as Section 5a Application No. 9.

Former A.T.A. President Joins D.T.A. Staff

Henry E. English has been appointed director of the Street and Highway Transport Division of the Defense Transport Administration. Mr. English is chairman of the board of directors of Red Ball Motor Freight, Inc., of Dallas, Tex. He is also chairman of the board of American Trucking Associations, having been elected to that position last October after serving a one-year term as president of the association.

I.C.C. Proposes Regulations For Truck-Forwarder Pacts

Proposed rules and regulations for filing with the Interstate Commerce Commission of contracts between freight forwarders and motor carriers have been issued by the commission. They were promulgated with a March

ONE OF TWO diesel switcher and booster units built by the Montreal Locomotive Works for use in the Canadian Pacific's new St. Luc (Montreal) retarder yard. Each unit consists of a standard 1,000-hp. diesel switcher and a permanently coupled "booster," without controls or diesel engine, but with four G. E. 731 traction motors which draw current from the lead unit. Total starting tractive force of the locomotive and booster, at 30 per cent adhesion, is 141,000 lb. St. Luc yard was described previously

5 notice which gave interested parties until April 12 to make representations for or against them.

The contracts to be filed are those covering arrangements under which forwarders utilize the "services and instrumentalities" of motor carriers. As a result of the December 20, 1950, amendment to the Interstate Commerce Act's Part IV, such contracts may cover arrangements for terminal-to-terminal trucking up to a distance of 450 mi., as well as for assembling and distribution services.

The commission's notice proposed six rules, including one which would provide that all forwarder-trucker contracts on file would be open to public inspection. Another rule would require the contracts to specify services, routes, and compensation to be paid the truckers.

Army Likes "DF" Cars

Test runs of the General American-Evans Company's "DF" box car by the Army Transportation Corps "indicate a saving in time, labor, materials and money," according to a News Letter issued by the Army's Chief of Transportation on March 6. Reporting specifically upon a test run of such a car, loaded with quartermaster general supplies from the New York Port of Embarkation to the Jeffersonville, Ind., Quartermaster Depot, the letter says, in part:

"Side rails and cross members which are supplied with the car constitute a quick, economical and secure method for loading of cars. No additional time was required to unload the car. Other dunnage was not needed and the cargo was in satisfactory condition upon arrival. The supplies were well braced and the adjustability of dunnaging offered by cross members will permit easy loading and bracing of assorted sized containers which are common to shipments of quartermaster property.

"As a consequence of the side rails and cross members, which come with the freight cars, the shipping costs would be substantially reduced since not only could time required for bracing and dunnaging be reduced, but the cost of dunnage would be entirely eliminated in many cases."

St. Lawrence Hearings

The House committee on public works concluded on March 7 a series of hearings which it had been holding since February 20 to receive presentations in favor of pending resolutions to approve the United States-Canada agreement for construction of the proposed St. Lawrence seaway and power project. The hearings will be resumed on April 2, when opposition witnesses are scheduled to begin their testimony.

Among those making presentations in favor of the project were Secretary of State Acheson; Secretary of Commerce Sawyer; Secretary of Defense Marshall; Secretary of the Interior Chapman; Director Wilson of the Office of Defense Mobilization; Chairman Small of the Munitions Board; Major General Pick, the Army's Chief of Engineers; Administrator Cochrane of the Maritime Administration; Chairman Wallgren of the Federal Power Commission; several members of Congress; and various non-government witnesses, including N. W. Foy of the Republic Steel Corporation and G. W. Humphrey of the M. A. Hanna Company.

Meanwhile, the National Industrial Traffic League has filed with the committee a statement in opposition to the project. The filing was by Chairman Frank A. Leffingwell of the league's Legislative Committee; and the statement called attention to the fact that the league for years has opposed the seaway on the ground that it would be economically unsound.

The statement went on to suggest that, if only a small part of the proposed outlay on the seaway were spent on new freight cars and other railroad facilities, "much greater results could be obtained transportationwise than can be hoped for in connection with this project."

Freight Car Loadings

Loadings of revenue freight in the week ended March 10 totaled 749,627 cars, the Association of American Railroads announced on March 15. This was a decrease of 36,240 cars, or 4.6 per cent, compared with the previous week; an increase of 41,716 cars, or 5.9 per cent, compared with the corresponding week last year; and an increase of 40,301 cars, or 5.7 per cent, compared with the equivalent 1949 week.

Loadings of revenue freight for the week ended March 3 totaled 785,867 cars; the summary for that week, as compiled by the Car Service Division, A.A.R., follows:

REVENUE FREIGHT CAR LOADINGS
For the week ended Saturday, March 3

District	1951	1950	1949
Eastern	145,236	106,975	132,686
Allegheny	167,223	108,922	147,598
Pocahontas	63,175	22,498	54,948
Southern	139,875	113,599	124,341
Northwestern	81,544	68,680	78,310
Central Western	123,634	98,787	111,704
Southwestern	65,180	54,988	55,965
Total Western Districts	270,358	222,455	245,979
Total All Roads	785,867	574,449	705,552
Commodities:			
Grain and grain products	52,334	42,072	46,717
Livestock	6,810	7,675	8,377
Coal	151,055	58,098	138,434
Coke	17,194	8,150	15,630
Forest products	47,871	38,948	36,933
Ore	22,059	8,855	14,185
Merchandise l.c.l	86,478	83,070	96,484
Miscellaneous	402,066	327,581	348,792
March 3	785,867	574,449	705,552
February 24	734,794	546,707	688,128
February 17	740,557	560,068	697,335
February 10	573,163	568,816	699,442
February 3	651,124	612,464	682,143
Cumulative total 9 weeks	6,494,975	5,252,897	6,317,111

In Canada. —Carloadings for the week ended March 3 totaled 75,660 cars compared with 76,123 cars for the previous week and 71,566 cars for the corresponding week last year, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
March 3, 1951	75,660	39,468
March 4, 1950	71,566	28,497
Cumulative Totals for Canada:		
March 3, 1951	663,593	319,342
March 4, 1950	600,325	251,774

1950's 2nd-Quarter Loading Estimate Was 7.9% Low

The 13 Regional Shippers Advisory Boards underestimated carloadings for the third quarter of 1950 by 7.9 per cent, according to the latest comparison of forecasts with actual loadings. Chairman A. H. Gass of the Car Service Di-

Clean Flues

ARE ESSENTIAL

for good DRAFTING

for good EVAPORATION

for maximum SUPERHEAT, with
a resultant maximum cylinder hp.

THE
SUPERHEATER CO.
Division of
COMBUSTION ENGINEERING-SUPERHEATER, INC.
200 Madison Ave., NEW YORK 16
Bankers Building, CHICAGO 3
Montreal, Canada, THE SUPERHEATER COMPANY, Ltd.
Representing AMERICAN THROTTLE COMPANY, INC.

The Elesco Flue Washer has proved its value as a tool for keeping flues clean. Used periodically, it will quickly amortize its investment cost in reduced fuel consumption and improved locomotive performance.

Superheaters • Superheater Pyrometers • Steam Driers • Exhaust Steam Injectors • Feedwater Heaters • Steam Generators • Oil Separators • American Throttles

vision, Association of American Railroads, issued the comparison.

It showed underestimates by 12 boards and an overestimate by the other. By commodity groups there were 21 underestimates and 11 overestimates. The range was from an underestimate of 30.8 per cent in the case of chemicals and explosives to an overestimate of 14.8 per cent in the case of live-stock.

In addition to that on chemicals and explosives, there were underestimates of more than 10 per cent for eight other commodity groups. Five of the overestimates, including that on live stock, were more than 10 per cent off.

COMPARISON: ESTIMATED NATIONAL FORECAST, REGIONAL SHIPPERS ADVISORY BOARDS WITH ACTUAL CARLOADINGS — THIRD QUARTER 1950

Board	Carloadings Third Qtr. 1950 Estimated	Actual	Percentage of Accuracy Over Est'd.	Under Est'd.
Central Western	262,909	280,787		6.8%
Pacific Coast	378,299	414,561		9.6
Pacific Northwest	278,130	279,903		0.6
Great Lakes	699,803	707,128		1.0
Ohio Valley	799,291	1,009,243		26.3
Mid-West	872,533	967,556		10.9
Northwest	856,452	812,589	5.1%	
Trans-Mo-Kansas	400,269	409,935		2.4
Southeast	832,454	926,935		11.3
Southwest	480,177	506,648		5.5
New England	95,062	115,801		21.8
Atlantic States	786,173	851,985		8.4
Allegheny	920,725	980,620		6.5
Totals	7,662,277	8,263,691		7.9

Furlough Fares Continued Until January 31, 1952

Reduced furlough fares on all railroads for military personnel traveling in uniform at their own expense have been extended to January 31, 1952. The fares, providing round-trip coach rates on the basis of 2¼ cents per mile or less, had been scheduled to expire March 31.

The extension was announced by Earl B. Padrick, chairman of the Transcontinental and Western Passenger Associations, following a March 8 meeting of passenger traffic officers in Chicago. Mr. Padrick also announced that the return limit on the furlough ticket would be extended from 30 days to three months.

Loco., Passenger Car Wheels Among Reserved Products

Wheels and axles are now included among products which the National Production Authority requires steel producers to "reserve" on their order boards to meet defense-rated orders. The latter are orders carrying "DO" ratings, including "DO-97," which industry generally is authorized to use in acquiring maintenance, repair and operating supplies.

The "reservation" plan requires steel producers to accept defense-rated orders for prescribed percentages of their output. As to wheels and axles of both carbon and alloy steel, the "reserved" proportion is 5 per cent. In the railroad field, the wheels and axles involved would be those needed for repair and maintenance of locomotives and passenger cars; maintenance and repair supplies for freight cars are included in the freight-car program, which is an allocation program outside the DO-rating arrangement.

R.E.A. Asks 25-cent Rate Hike on Interim Basis

The Railway Express Agency has asked the Interstate Commerce Commission for an interim rate increase of 25 cents per shipment, with certain exceptions, pending final disposition of the agency's petition for approval of an upward revision in its rates and charges. (See *Railway Age* of January 22, page 35.)

In outlining its need for an interim increase, R.E.A. said recent wage settlements with its employees will cost $19,400,000 on an annual basis. The 25-cents-per-shipment increase would yield about $20,000,000, based on estimates of 1951 traffic.

Exceptions to the proposed interim increase include express traffic moving in carloads, milk and cream, newspapers and corpses.

The agency requested the commission, on the basis of the showing made in the interim petition, to grant the 25-cent increase without hearing. It also asked that the increase be granted "at the earliest possible date, on one day's notice." If hearings are held, R.E.A. asked that they begin as quickly as possible. The commission has already set a March 29 hearing date on the agency's earlier proposal, which is docketed as Ex Parte 177.

On March 14 the commission issued a notice stating that the supplemental petition "will also be heard" at the March 29 hearing. It said that oral argument on the interim petition will begin April 6, before the commission in Washington, D. C.

C. & E. I.-L. & N. Speed Great Lakes to Gulf Service

Faster passenger train service between Chicago and cities on the Mississippi Gulf Coast was placed in effect by the Chicago & Eastern Illinois and the Louisville & Nashville on March 18. The new service is made possible by a rescheduling of the L.&N.'s "Humming Bird" to handle connecting coaches and sleeping cars off the Chicago-Atlanta "Georgian" from Nashville to Montgomery, Ala., Mobile and New Orleans, La. The new service will reduce travel time by four hours or more between Chicago and the Gulf cities as well as to the vacation centers of Gulfport, Miss., and Biloxi.

Ten RRs Get Fare Increase in New York

Ten railroads operating in New York have received Public Service Commission authority to increase intrastate passenger fares by 12½ per cent. The railroads are the New York Central, the Delaware & Hudson, the Erie, the Delaware, Lackawanna & Western, the Lehigh Valley, the Baltimore & Ohio, the Pennsylvania, the Boston & Maine, the Rutland and the New York, Chicago & St. Louis. The increase, which does not affect commutation fares, will raise total revenue of the ten carriers by $2,393,200 a year, according to an estimate of the commission.

Parkes Leaves Apex Film

Holcombe Parkes, who, for the past year, has been executive vice-president at New York of the Apex Film Corporation of Los Angeles, Cal., resigned from that position on March 1.

Mr. Parkes went to Apex from the National Association of Manufacturers, of which he had been vice-president, public relations, since September 1, 1945. Prior to that time, as reported in *Railway Age* of January 14, 1950, page 41, he had been successively, between 1919 and 1945, an associate editor of *Railway Age;* editor of the Norfolk & Western employee magazine; director of advertising and publicity for the N.&W.; associate director of public relations of the Association of American Railroads; and assistant to president of the Southern.

An announcement of Mr. Parkes' future plans will be made shortly.

Major General and A.T.& T. Executive Join D.P.A. Staff

Major General Thomas F. Farrell has joined the staff of the Defense Production Administration as deputy administrator for resources expansion, while Charles E. Wampler has become director of the administration's Office of Program and Requirements. General Farrell has been serving as commanding general of the Army's 301st Logistical Command of Camp Rucker, Ala.; Mr. Wampler is on leave from his position as assistant vice-president of the American Telephone & Telegraph Co.

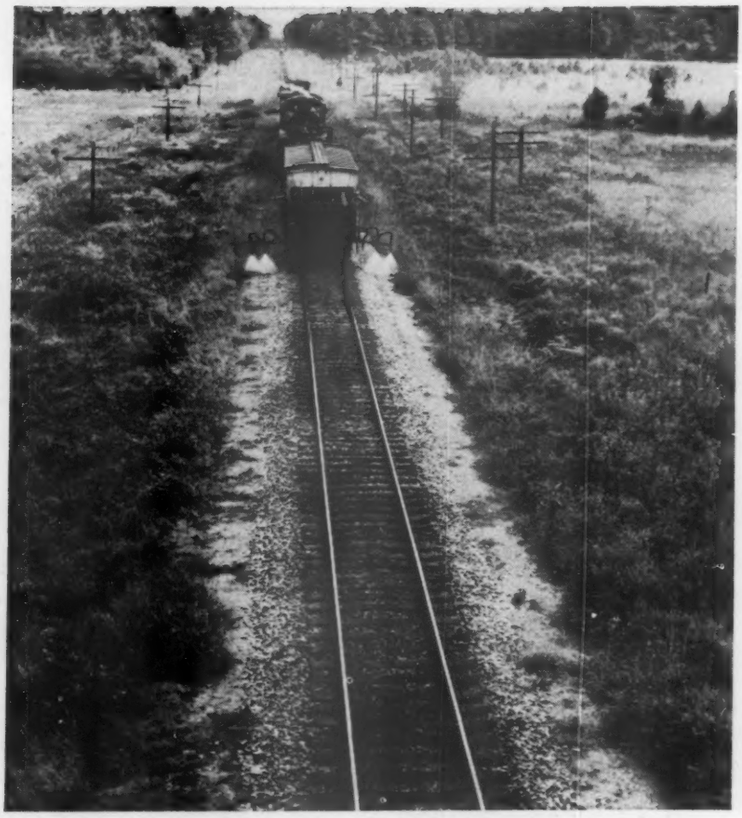
In announcing the Farrell appointment, D.P.A. Administrator William H. Harrison said the general will "coordinate and direct the development of adequate physical resources for defense needs with particular emphasis on early completion of facilities designed to increase basic resources." The matters "coordinated" will be all D.P.A. activities "in the field of government aids to business, such as direct loans, guaranteed loans, tax amortization, government-furnished plant or equipment . . ."

The Wampler appointment was announced in a statement which explained that the Office of Program and Requirements would be responsible for D.P.A.'s "central programming functions," including: "(1) Analysis of overall data on requirements and resources; (2) program evaluation and authorization of programs to meet defense production needs as well as essential civilian requirements; (3) allocation of resources to support approved programs; (4) identification

(Continued on page 83)

LONG-RANGE WEED CONTROL PROGRAM GIVES CLEAN TRACK AT DIMINISHING ANNUAL COSTS

General Chemical offers tailor-made program for maintaining weed-free ballast . . . enables road to achieve clean track immediately with continuous reduction in regrowth.



Spray train operating in southwest territory. General Chemical's Weed Control Service provides modern spray trains and highly trained technicians.

Out of its extensive background in handling individual railroad weed problems, General Chemical has developed a modern method of control which now enables a road to achieve clean track immediately . . . with a continuous reduction in root growth, coupled with diminishing costs.

Such results are obtained by a two- or three-year program following an application schedule *especially tailored to overcome each road's particular weed problems.*

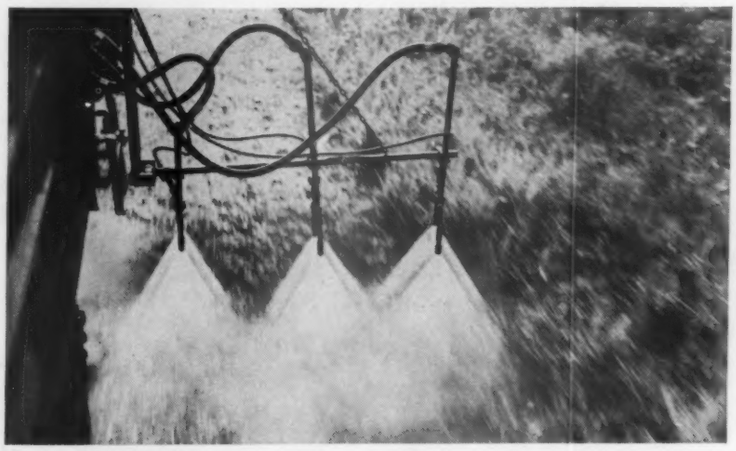
Aimed at control of perennial root systems, General's scientific method assures killing off of long established perennials; continually reducing amount of regrowth year after year; eliminating heavy seed germination; and preventing outside encroachment in subgrade. With this thorough method, track can be maintained in a relatively weed-free condition with minimum dosages!

While initial costs may be somewhat greater than for temporary annual relief, such a high level of continuing control is achieved that the over-all long-range costs are far less and lead to increased savings. The end result is track which can be kept weed-free year after year with the smallest possible budget.

Important Information Available—

To help railroad managements in planning their weed control programs, General Chemical has just published a descriptive portfolio "A Policy Decision in Railroad Weed Control". Outlining General's method of treatment, it contains full color illustrations of results achieved in northern and southern areas. Copies may be obtained by writing on business letterhead to Weed Killer Department, General Chemical Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, N. Y.

Duplex spray system gives complete control for all conditions. Two sets of remote-controlled spray heads permit instant application of correct dosages for any type of weed growth and track conditions encountered.



Main line track in central Illinois shows typical results. Sub-grade and berm received a single treatment for two successive years. Now cleared of root systems of Goldenrod, Perennial Sunflower, Bracken, Dogbane, other weeds.

DESIGNED AND BUILT
BY
Bugatti

SIX
MORE RDC's
for the
SEASHORE LINES

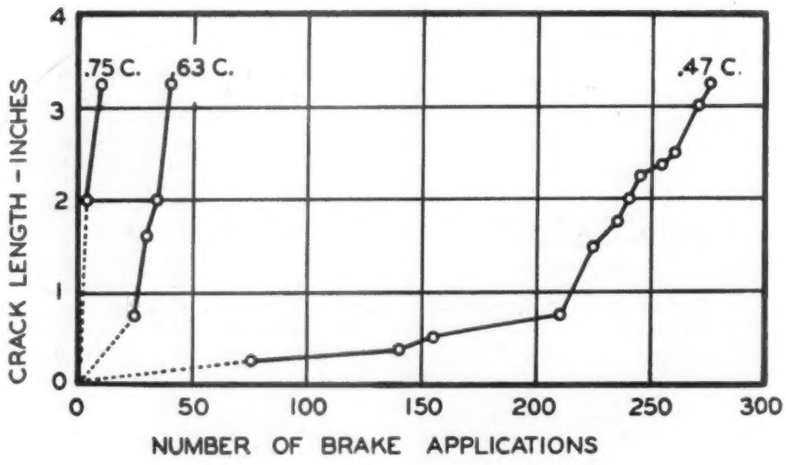
● Last May the Pennsylvania-Reading Seashore Lines purchased six Budd-built Rail Diesel Cars for the run from Camden, N.J., to a three-pronged destination on the South Jersey seacoast. Service is supplied to the resort cities of Ocean City, Wildwood and Cape May.

Now the P. R. S. L. orders six more of these revolutionary new railway vehicles that deliver high-speed service . . . high availability and all-around performance . . . all at a cost less per passenger mile than any comparable form of transportation.

The RDC, what's more, is *completely* standardized. Buy it right from the production line at an established price. Many a domestic railroad . . . plus lines in Cuba and Australia . . . have found the all-stainless steel, Budd-built RDC, the efficient, economical answer to modern branch line . . . *and main line* . . . service!

The Budd Company, Philadelphia 32

Budd



Rate of growth of thermal cracks as related to carbon content of wrought steel wheels

He tells the "fortunes" of railroad wheels

to help bring you more profitable wheel performance

The man is an Armco Wheel Technician. His "crystal ball," in this case, is an Armco-developed wheel-testing machine that can duplicate years of actual service in a few short weeks. With it, he can study the "future" of any standard or special analysis wheel *today*.

Hundreds of tests on this and other research tools have enabled Armco to answer questions of vital importance in the production of safe, economical wrought steel wheels. These include such questions as: "What factors influence the resistance of a wheel to thermal cracking?" and "What factors affect the rate of crack growth?"

The chart above, for example, shows how the rate of thermal crack growth is related to the carbon content of the wheel.

The demands made on passenger car wheels by today's faster schedules and quicker stops prove the value of Armco's intensive program of wheel research—*a program that has been carried on for more than fifteen years.*

As a result, today's Armco Wrought Steel Wheel is built to meet severe service conditions. It delivers greater safety and *more miles per wheel dollar.*

For complete data on Armco Wrought Steel Wheels, call our nearest district office or write us at the address below.

ARMCO
STEEL CORPORATION

ARMCO

2021 Curtis Street, Middletown, Ohio • Plants and Sales Offices from Coast to Coast • Exports: The Armco International Corporation

(Continued from page 78)
of deficiencies in the supplies of materials and other resources and the recommendation of programs for the more efficient utilization of available resources and for the expansion of resources."

ORGANIZATIONS

The **Atlantic States Shippers Advisory Board** will hold its 84th regular meeting at the Claridge Hotel, Atlantic City, N. J., April 26 and 27. Four luncheons will be held on the first day for various committees, with a general luncheon on the second day; the guest speaker is to be announced later.

Harry F. Willis, general agent of the Chicago, Burlington & Quincy, at Peoria, Ill., was elected president of the **Transportation Club of Peoria,** at its annual election on February 15. Other officers installed were: First vice-president, R. L. O'Brien, traffic manager, Allied Mills, Inc.; second vice-president, F. O. Goetz, district manager, Kimbel Lines; and secretary L. R. Barnewolt, agent, Peoria Joint Freight Agency.

The **Rail Traffic Association of Cincinnati** will install the following officers and directors at its annual meeting on March 26: D. W. Jordon, general agent, Missouri Pacific Lines, president; F. F. Foery, general agent, Atchison, Topeka & Santa Fe, vice-president; L. R. Brown, general agent, Texas & Pacific, secretary-treasurer; and F. C. Street, division freight agent, Louisville & Nashville, and E. L. Franklin, general agent, Winston-Salem Southbound, directors.

The **Pacific Shippers Advisory Board** will hold its 79th regular meeting on March 22 in the Multnomah hotel, Portland, Ore. Highlights of the meeting will be the annual election of officers and an address by C. W. Bell, managing director of the Western Retail Lumbermen's Association, on the "World's Most Famous Forest Fire." R. E. Clark, manager of the Closed Car Section of the Car Service Division of the Association of American Railroads, will summarize the national transportation picture. A. M. Cloninger, manager of traffic and warehousing of the Longview Fibre Company, and president of the board, will preside.

The **Chicago Chapter, Delta Nu Alpha Transportation Fraternity,** has elected the following officers for the ensuing year: President, Everett A. Weathers, Continental Can Company; vice-president, Marion A. Pool, Chicago, Burlington & Quincy; financial secretary, Frank A. Johnson, Wm. Wrigley, Jr., Company; treasurer, Samuel E. Floyd, Coca Cola Company; secretary, Robert Raughley, Jr., Pennsylvania, and chairman of the board, S. T. Iden, Pennsylvania.

The **Military Railway Service Veterans** have selected Cleveland, Ohio, as their 1951 convention city. Director General Conrad J. Freeman has announced that the group's sixth annual convention will be held on September 22, 1951, and that individual unit reunions will be conducted on the previous day.

The **Greater New York Safety Council,** and cooperating agencies, will hold its 21st annual safety convention and exposition in the Hotels Statler and Governor Clinton, New York, April 3-6.

The **Eastern Association of Car Service Officers** will hold its next meeting at the Benjamin Franklin Hotel, Philadelphia, Pa., on April 12, at 10 a.m.

The **Railway Business Women's Association of Metropolitan New York** will hold its next meeting on March 27, at 6:30 p.m., in room 553, 466 Lexington avenue. A fashion show will be given by club members.

The **Great Lakes Regional Advisory Board** will hold its 28th annual-77th regular meeting in the Hotel Statler, Buffalo, N. Y., on March 28. Major Ray H. Puffer, of the Cornell Aeronautical Laboratory, and vice-president of the Buffalo Chamber of Commerce, will be guest speaker at a special luncheon to be held at 12:30 p.m. The luncheon will be co-sponsored by the board, the **Buffalo Chamber of Commerce;** the **Buffalo Traffic Club;** the **Central Railway Club of Buffalo;** the **Transportation Club of Buffalo,** and the **Niagara Frontier Industrial Traffic League.**

SUPPLY TRADE

Safety Car Sales Were $5,681,784 Last Year

Sales of the Safety Car Heating & Lighting Co. and its subsidiaries totaled $5,681,784 in 1950, compared with $7,586,163 in the preceding year, according to the annual report. Net income was $727,945, compared with $893,635. "While appreciably large orders for equipment for new passenger cars are not expected in 1951," C.W.T. Stuart, president, said in the report, "it is anticipated that the volume of orders for replacement parts will offset this to a considerable extent."

General Steel Castings' 1950 Net Was $2,028,187

Net income of the General Steel Castings Corporation was $2,028,187 last year, compared with $2,232,894 in 1949, according to the firm's annual report. "Expenditures in 1950 for new construction, machinery and equipment aggregated $1,200,363, of which $647,863 was expended at the Commonwealth plant and $552,500 at the Eddystone plant," Charles P. Whitehead, president, said in the report. "The present backlog of tonnage to produce is substantial," he added, "and it appears we will be operating both plants at maximum capacity by the end of this year."

Budd 1950 Sales and Profit Highest in Firm's History

Sales of the Budd Company totaled $290,409,538 in 1950, compared with $266,633,612 in the preceding year. Net profit amounted to $18,425,800, compared with $14,808,116. Sales and profit last year were the highest in the company's history, Edward G. Budd, Jr., president, said in the recently released annual report. Prospects for 1951, he added, "depend greatly on governmental decisions. Both automotive and railroad passenger car demand is strong, but controls and prohibitions doubtless will curtail these activities."

Baldwin-Lima-Hamilton Acquires Austin-Western

The Baldwin-Lima-Hamilton Corporation has acquired all 303,945 outstanding common shares of the Austin-Western Company in exchange for 486,312 Baldwin-Lima-Hamilton common shares. Approval by Baldwin directors of the proposed acquisition was announced late last year (see *Railway Age* of December 23, 1950, page 47). Offices, officers and other personnel of Austin-Western will remain unchanged.

National Malleable Net Was $4,020,599

Second highest sales volume and profit in the history of the National Malleable & Steel Castings Co. have been reported for 1950 by Cleve H. Pomeroy, president. Net sales were $44,813,702 last year, compared with $34,604,755 in 1949. Net profit totaled $4,020,599, compared with $2,624,045. The company, Mr. Pomeroy said, is beginning an expansion program involving expenditure of approximately $6,300,000, principally for installation of new equipment.

Fairbanks, Morse Sales Totaled $85,423,868

Net sales of Fairbanks, Morse & Co. last year aggregated $85,423,868, compared with $77,650,060 in 1949. Net profit was $3,840,247, equal to $6.40 a common share, compared with $3,416,427, equal to $5.70 a share. "The company ended the year with a substantially increased backlog," Robert H. Morse, chairman and general manager, said in the annual report. "The upward

swing in orders received has continued to date at an increasing rate."

Keith D. Landell has been appointed president of **Adanac Supplies, Ltd.,** Montreal, Que., succeeding **J. A. Cameron,** who has been appointed chairman of the board.

M. A. Moore has been appointed eastern division manufacturing and sales manager of the **Double Seal Ring Company,** Fort Worth, Tex. Mr. Moore, formerly sales and service representative in Maine, Vermont and New Hampshire, will maintain new headquarters at New Rochelle, N. Y. Before joining Double Seal, Mr. Moore was a supervisor of diesel engine sales and service at Houston, Tex., for General Motors Corporation.

The Cleco division of the **Read Roller Bit Company,** Houston, Tex., has appointed the **Olson Equipment Company,** 2930 Blaisdell avenue, Minneapolis, Minn., as distributors of Cleco products in that area.

Frank U. Naughton, Jr., has been appointed manager of the Eastern sales division of the Hyatt Bearings division of **General Motors Corporation,** to succeed the late **W. L. Iliff,** whose death was reported in *Railway Age* of February 19, page 50. Mr. Naughton has worked as sales engineer for Hyatt since 1924, serving in the Philadelphia, Pa., New England and southeastern territories.

M. B. Garber, director of sales for the **Thew Shovel Company,** Lorain, Ohio, has been appointed on-call consultant for the **National Production Authority,** Washington, D. C., on matters pertaining to requirement, use and production of construction machinery. Mr. Garber will continue his duties at Thew Shovel.

W. E. Guy, district sales manager of the **Graybar Electric Company,** at Chicago, has been promoted to assistant district manager of the Chicago district; **L. C. Esthus,** branch manager at Des Moines, Iowa, has been appointed district sales manager at Chicago, succeeding Mr. Guy, and **D. M. Hitchcock,** of San Francisco, Cal., has been transferred to Des Moines to succeed Mr. Esthus.

The **United States Steel Company** has begun construction of its new Fairless Works in Falls Township, near Morrisville, Pa. Ground was broken on March 1, with ceremonies marking the first step in the building of this major steel plant, which will have an annual productive capacity of 1,800,000 tons.

Chester W. Schweers, formerly manager of the New England region for the **Allis-Chalmers Manufacturing Company,** has been appointed director of sales of the general machinery division. **Merton M. York,** formerly manager of the Boston, Mass., district office, has been appointed manager of the New England region to succeed Mr. Schweers. Mr. Schweers joined Allis-Chalmers in 1930 and was assigned to the New Orleans, La., district office as a sales representative. In 1942 he was appointed manager of the Houston, Tex., office; in 1947, manager of the Los Angeles, Cal., district office, and, in March 1950, manager of the New England region. Mr. York joined Allis-Chalmers in 1939 and worked as a sales representative in the Charlotte, N. C., district office for nine years before his appointment as manager at Boston.

The **Flintkote Company** has opened a new office for its industrial products division in the Cafritz building, 1625 I street, N.W., Washington, D. C. **Hayden A. Glatte,** former manager of the special products section, will head the new office.

EQUIPMENT AND SUPPLIES

FREIGHT CARS

15,947 Freight Cars Ordered in February

Orders for new domestic freight cars in February totaled 15,947, the American Railway Car Institute and the Association of American Railroads have announced jointly. February orders raised the backlog of undelivered cars to an all-time high of 154,861 as of March 1. Deliveries of new cars in February were 5,842, compared with 5,949 in January. A breakdown by types of cars ordered and delivered during February, and of cars on order on March 1, is given in the accompanying table.

The announcement said: "Cars delivered in January and February were produced from steel rolled in the last quarter of 1950, before the present goal of 10,000 cars a month authorized by the National Production Authority became effective in January 1951. Since it takes from 60-90 days to ship finished steel to car building plants, to fabricate car parts from the steel, and to assemble cars, it is not expected that the goal of 10,000 cars a month will be reached until after the allocations program has been in effect for at least three months. Reports from car builders and railroads show steadily increasing production schedules projected for March and April, as the larger allotment of steel which began to be available in January and February is processed into cars."

TYPE	ORDERED	DELIVERED	ON ORDER & UNDELIVERED Mar. 1, 1951
Box—Plain	6,550	2,501	56,451
Box—Auto	....	....	1,400
Flat	252	196	3,899
Gondola	3,026	971	33,387
Hopper	2,300	1,128	34,328
Covered Hopper	555	337	4,939
Refrigerator	1,350	182	8,332
Stock	....	....	500
Tank	1,638	194	10,112
Caboose	150	85	598
Other	126	248	915
TOTAL	15,947	5,842	154,861
Carbuilders	10,597	4,514	109,860
Railroad Shops	5,350	1,328	45,001

The **American Refrigerator Transit Company** has ordered 500 40-ton refrigerator cars from the Pressed Steel Car Company.

The **Atlantic Coast Line** has ordered six 50-ton air dump cars from the Magor Car Corporation.

The **Central of New Jersey** has ordered 500 50-ton box cars from the American Car & Foundry Co. The inquiry for this equipment was reported in *Railway Age* of December 9, 1950, page 63.

The **Cudahy Packing Company** will build 50 40-ton refrigerator cars in its own shops as soon as material becomes available, which, the company expects, may be no later than next June.

The **Kansas City Southern** has ordered 500 70-ton hopper cars from the Pullman-Standard Car Manufacturing Company.

The **Lake Superior & Ishpeming** has ordered 300 70-ton ore cars from the Bethlehem Steel Company at a cost of $1,740,000, and 100 50-ton box cars from the Pullman-Standard Car Manufacturing Company at a cost of $560,000. The ore cars are scheduled for delivery in August 1952 and the box cars in the second quarter of 1952.

The **Louisville & Nashville** has ordered 100 70-ton covered hopper cars from the Pullman-Standard Car Manufacturing Company at an approximate cost of $690,000. Delivery is scheduled for mid-1952.

The **Mather Stock Car Company** has ordered 50 40-ton refrigerator cars from its own shops.

The **Minneapolis, Northfield & Southern** has ordered 100 50-ton box cars from the Pullman-Standard Car Manufacturing Company at an estimated cost of $560,000. Delivery is scheduled for the third quarter of 1952.

The **New York Central System** has ordered 2,500 freight cars. For the parent New York Central the order includes 1,000 70-ton gondola cars to be built by the Greenville Steel Car Company and 500 70-ton flat cars to be constructed by the General American Transportation Corporation. The Bethlehem Steel Company will build

"CAT" BULLDOZER...

Price of a standard "Caterpillar" D8 Tractor is $15,000; No. 8A Bulldozer, $2,345; No. 24 Cable Control, $750, f.o.b. Peoria. Prices subject to change without notice.

America's all-purpose tool!

WORKING near Wenatchee, Washington, for the Great Northern R.R., this "Caterpillar" powerhouse is moving riprap material from native deposit for stockpiling and loading on flat cars. It's a "Cat" D8 Tractor with No. 8A 'Dozer with cable control — and for dependable *big* power and long life under the toughest conditions, you can't beat this matched tool.

These machines give you *matched* design — tractor and 'dozer built to work together. This brawny team is a bear at meeting work schedules. Sturdy construction and quality materials enable it to keep punching full time without down-time, and the special steel cutting edge of the blade hammers through the toughest going. Most important of all, the precision methods used in "Caterpillar" factories build extra years of life into these highly maneuverable bulldozers.

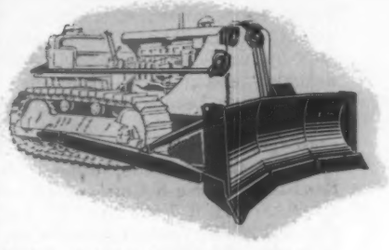
For help with your equipment problems, see your "Caterpillar" dealer *now*. Today's expanding military program has high priority. But it is recognized that our national preparedness depends upon stepped-up civilian production too. So your "Caterpillar" dealer is especially interested in meeting your needs — through equipment replacement and by exercising his working partnership with you to keep the machinery you have *on the job*.

CATERPILLAR, PEORIA, ILLINOIS

• • •

"CATERPILLAR" BULLDOZER EXTRA FEATURES

1. Tractor and 'dozer *broken to harness*, and a size for every need.
2. Moldboard curvature for active, *rolling*, higher production loads.
3. Box section side arms — extra thick at points of greatest stress.
4. Choice of straight or angling type of blade, simple to maneuver and easy to adjust or detach.
5. Your choice of hydraulic or cable control.
6. The power of the "Caterpillar" Diesel Engine is geared to blade *capacity*.



New Addition to 'Dozer Line

Here's a specialist that can step up production and cut costs. It's the brand new No. 8U 'Dozer for use with the "Caterpillar" D8 Tractor with cable control. Working best in loose or light material, the end portions of this blade extend forward to give it a flat U shape. This enables it to drift large loads without spillage, 'dozing longer distances for bigger production. The No. 8U is built to the same high standards of strength and long life as the other "Caterpillar" Bulldozers. The versatility of this new tool gives it excellent performance on all kinds of 'dozing jobs, from stockpiling to pioneering.

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

1,000 70-ton gondola cars for the Pittsburgh & Lake Erie.

The **Northern Pacific** has ordered 1,000 50-ton box, 200 70-ton ore and 50 30-ft. caboose cars from its Brainerd, Minn., shops at an estimated cost of $6,505,000. The order in whch this equipment is to be built will depend upon delivery of materials. According to present information, all cars will be completed in 1952—the ore cars in March, the box cars in August and the caboose cars in December.

The **Pennsylvania** has ordered 250 70-ton covered hopper cars from its Altoona, Pa., shops.

The **Virginian** has ordered 300 50-ton box cars from the Pullman Standard Car Manufacturing Company, at an estimated cost of $1,700,000. Delivery of the cars, inquiry for which was reported in *Railway Age* of January 29, page 59, is expected in the second quarter of 1952.

LOCOMOTIVES

N.Y.C. Orders 387 Diesel Units Costing $64,000,000

The New York Central system has placed orders for 387 diesel-electric locomotive units costing approximately $64,000,000. This is the largest order for motive power ever placed by the Central. Included are 22 2,250-hp. "A" passenger, 131 1,500-hp. "A" freight, 7 1,500-hp. "B" freight, 27 1,500-hp. road-switching and 11 1,200-hp. and 6 800-hp. switching units, to be built by the Electro-Motive Division of General Motors Corporation; 62 1,600-hp. "A" freight, 32 1,600-hp. "B" freight, 27 1,600-hp. road-switching and 13 600-hp. switching units, to be constructed by the American Locomotive-General Electric Companies; 8 2,400-hp "A" passenger, 8 1,600-hp. "A" and 4 1,600-hp. "B" freight units, ordered from Fairbanks, Morse & Co.; and 18 1,600-hp. "A" and 8 1,600-hp. "B" freight and 3 1,200-hp. switching units, to be built by the Baldwin-Lima-Hamilton Corporation.

The **Canadian National** has ordered 24 diesel-electric switching locomotive units costing about $2,500,000. Twelve 800-hp. units will be built by General Motors Diesel, Ltd., and 12 660-hp. units by the Montreal Locomotive Works.

The **Chicago, Rock Island & Pacific** has been authorized by its board of directors to purchase 46 diesel-electric locomotive units costing more than $7 million. With delivery of these units, the Rock Island said it will be "approximately 100 per cent dieselized." To be ordered are: Six 2,250-hp. passenger, 15 1,500-hp. double-control suburban service, and 25 1,500-hp. general-purpose units.

The **Kansas City Southern** has ordered four 2,250-hp. lead passenger units from the Electro-Motive Division of the General Motors Corporation.

SIGNALING

The **Missouri-Kansas-Texas** has ordered from the Union Switch & Signal Co. material to install automatic signaling on 26.6 miles of single track between Granger, Tex., and Elgin. The order includes style H-5 searchlight signals, relays, rectifiers, transformers, switch circuit controllers and housings. Field installation will be handled by railroad forces.

ABANDONMENTS

Applications have been filed with the I.C.C. by:

NORFOLK SOUTHERN.—To abandon two branch lines in North Carolina 17.5 mi. between Candor and Ellerbe, and 23.2 mi. between Star and Asheboro.

RUTLAND.—To abandon operation over 10.5 mi. of Addison Railroad Company trackage from a point near Whiting, Vt., to Larrabee's Point. The Addison also has requested authority to abandon the line.

CONSTRUCTION

Wabash Announces Plans To Enlarge Decatur Yard

The Wabash will enlarge and modernize its Decatur, Ill., yard facilities at an estimated cost of $3,757,000. The program includes construction of 2.92 mi. of main track, 52.7 mi. of yard track, a new diesel engine terminal, two interlocking plants, a talk-back loudspeaker communication system, a complete night lighting system, emergency car repair facilities, two new yard offices, new track scale, stock pens and driveways. When completed, the yard's capacity will have been increased from 3,420 to 6,122 cars.

P. G. E. To Be Extended South into Vancouver

Byron Johnson, prime minister of British Columbia, has told the provincial legislature that the government plans to extend the provincially owned Pacific Great Eastern from its present southern terminal at Squamish, B. C., to North Vancouver. The 42-mi. line is estimated to cost from $8.5 million to $10 million; work on it is expected to start in the near future, provided steel is available and necessary funds can be raised at reasonable interest rates.

P. G. E. freight between Vancouver and Squamish is presently handled by barge, and the inability of this barge service to cope with the traffic is reported to be the reason for the government's decision to extend the rail line. Any attempt to expand the barge service would be, Mr. Johnson said, only "a makeshift solution."

Work on the 82.5-mi. northerly extension of the P. G. E. from its former railhead at Quesnel, B. C., to a connection with the Canadian National at Prince George, is reported to be progressing satisfactorily, with rail laid for the first seven miles north of Quesnel and abutments and piers for the extension's three biggest bridges under construction. Rail on another 50 miles of line is expected to be laid south from Prince George early this spring, while a contract has been awarded to the Dominion Bridge Company for the superstructure of the 1,026-ft. Cottonwood River bridge, the largest on the new line. This northerly extension of the P. G. E. was described in detail in *Railway Age* of November 12, 1949, page 50.

With receipt of six 1,600-hp. diesel locomotives from the Montreal Locomotive Works, the road will be operated entirely by diesel power.

Atchison, Topeka & Santa Fe.—A contract for a change in line made necessary between Primrose, Tex., and Boss by construction of the Benbrook dam and reservoir, has been awarded to the List & Clark Construction Co., Kansas City, Mo.

Kansas City Southern.—This road and its subsidiary, the Louisiana & Arkansas, will spend approximately $4,500,000 for new transportation yards and mechanical facilities at New Orleans, La., and Shreveport. In addition, about $1,300,000 will be spent for passing track extensions and modernization of small stations.

Pacific Electric.—Construction of 2.82 miles of single track main line from the end of the Reliance Rock spur off the Baldwin Park-San Bernardino line to a connection with the Monrovia-Glendora line in Azusa is currently under way. Peter Kiewit Sons' Company has been awarded a contract covering construction of an underpass beneath Foothill boulevard, and all grading for the roadbed. The installation of a second-class interlocking plant where the new line crosses the Atchison, Topeka & Santa Fe, together with necessary changes in facilities of the latter road, will be handled under an agreement which remains to be executed. All track work on the new line will be performed by P.E. forces. The total estimated expenditure is $400,000.

Southern.—Division 4 of the I.C.C. has denied this road's application for authority to construct a 7-mi. branch line between Barnwell, S. C., and Snelling. The line would have served the Savannah River plant of the Atomic Energy Commission, but the division found that adequate rail service can be provided over lines already in the area — i.e., those of the Atlantic

READING COMPANY 1950

Revenues from operation were $118,952,178, an increase of 8% over 1949. Recovery from steel and coal industry work stoppages and freight traffic incident to defense effort contributed to this increase.

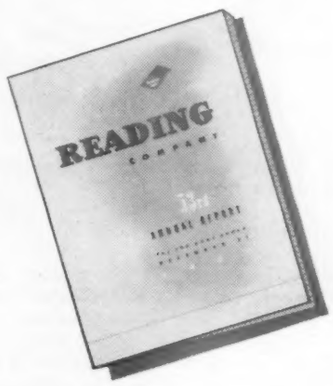
New equipment added included 24 1,500-hp. diesel road freight locomotive units, 6 1,500-hp. diesel passenger locomotive units and 1,600 freight cars of various types. On order for 1951 are 20 1,600-hp. diesel road switching locomotives and 1,500 freight cars.

All-electric car retarders were installed in Rutherford Westbound Classification Yard. Installation included new lighting, relocation of tracks and improved grade. Similar installation will be made in Rutherford Eastbound Classification Yard in 1951.

Annual Report compares operating efficiency between 1950 and 1940. It also shows in this period reductions of 12% in long-term debt, 36% in interest and 35% in net rentals.

Ker Brown

President.



SIMPLIFIED EARNING STATEMENT	December 31 1950	December 31 1949	Increase or Decrease
Revenues from Operation	$118,952,178	$109,747,175	$9,205,003–I
Expenses of Operation	93,530,278	91,266,297	2,263,981–I
Net Revenue from Operations	$ 25,421,900	$ 18,480,878	$6,941,022–I
Tax Accruals	$ 12,229,871	$ 8,900,159	$3,329,712–I
Net Equipment and Joint Facility Rentals	200,360	202,166	1,806–D
Net Railway Operating Income	$ 12,991,669	$ 9,378,553	$3,613,116–I
Other Income—Dividends, interest and rentals	$ 1,852,263	$ 1,932,286	$ 80,023–D
Gross Income Available for Fixed Charges	$ 14,843,932	$ 11,310,839	$3,533,093–I
Fixed Charges—Interest on funded and unfunded debt, rent for leased roads, and amortization of discount on funded debt	$ 5,536,281	$ 5,421,784	$ 114,497–I
Net Income Available for Dividends, Capital Expenditures and Other Corporate Purposes	$ 9,307,651	$ 5,889,055	$3,418,596–I

Coast Line and the Charleston & Western Carolina. The A.E.C. plant is to be built by E. I. du Pont de Nemours & Co.; the commission report noted that construction will require about 40,000 carloads of construction materials and equipment and 22,000 carloads of sand and stone for making concrete. (See *Railway Age* of January 29, page 59.)

Spokane, Portland & Seattle.—The Morrison-Knudsen Company has been awarded a contract for grading for the extension of four passing tracks in the state of Washington. All other work in connection with these extensions will be undertaken by company forces. The total estimated cost is $165,700. A contract for grading a 2.4-mi. line change on the Veronia branch has been awarded to the Natt McDougall Company, Portland, Ore. Involved in the project are 70 acres of clearing and grubbing, 467,000 cu. yd. of excavation, 404,000 cu. yd. of borrow, 5,000 cu. yd. of channel change, 5,000 cu. yd. of structural elevation and placement of 1,354 ft. of corrugated culverts, 230 ft. of tunnel liner and 972 ft. of multiplate pipe. All other work will be undertaken by company forces at an estimated total cost of $658,000. The same firm also has been awarded a contract for filling in on the same line a trestle 443 ft. long and 54 ft. high. This work will cost an estimated $48,000.

Western Pacific.—The following projects, in addition to extensive ballasting, rail replacement and rail anchor installations, bring to almost $5 million the construction projects in progress or scheduled to start within the next 90 days. Sidings between Alazon, Nev., and Wendover, Utah, and at Kampos, Nev., Golconda, Bliss, Ellison, Hunter, Flanigan and Phil, are to be lengthened to 125-car capacity in connection with an extensive C.T.C. program. Track changes, including siding extension, are also being made at Winnenucca, Nev. A 4,670-ft. storage track is to be constructed at South Sacramento, Cal. VHF communications equipment is to be installed on diesel switchers at various terminals at a total cost of $57,818, and a high frequency carrier telephone circuit will be installed between San Francisco and Elko, Nev., at a cost of $23,200. C.T.C. is being installed between Jungo and Weso at a cost of $194,000 and work will begin in May on replacement of existing style B2 position semaphore signals with three-position searchlight signals between Weso and Alazon at a cost of $143,710. Work will also begin in April on the C.T.C. installation between Alazon and Wendover, at a total cost of $1,577,750. Other projects include replacement of 2,000 lin. ft. of timber foot blocks with concrete sills in various mainline tunnels; installation of 43,000 sq. ft. of 10-ft. concrete roadways at Sacramento (Cal.) shops; and rearrangement of steam operating facilities at Wendover and Winnemucca for conversion to full diesel operation. All work, except the three last-named projects, has been assigned to company forces. Conversion work at Wendover and Winnemucca is being undertaken jointly by the W.P. and the Independent Iron Company.

FINANCIAL

Impounded C.G.W. Dividends Returned

The clerk of the Federal District Court in Chicago has returned to the Chicago Great Western the sum of $114,407 previously impounded by order of Judge John P. Barnes. The sum constitutes 30 per cent of a March 21, 1950, dividend declared on the road's preferred stock, and 20 per cent of a similar June 15, 1950, dividend. A third sum, $45,763, or 20 per cent of a September 28, 1950, dividend will probably be released this week, following reversal of the third impounding order by the Court of Appeals for the Seventh Circuit on March 14.

The history of this unique legal action began with a suit brought in June 1949 against the C.G.W. by a group of preferred stockholders in an attempt to force payment of dividends on this class of stock. The petitioners charged that a group of common stockholders came into control of the road in 1946 and used their alleged control to enhance the value of the common stock and depress the value of the preferred. This was done, the petitioners said, by (1) discontinuance of dividends on the preferred stock after March 1946, (2) use of earnings to make substantial retirements of bonded indebtedness and pay off a loan made by the Reconstruction Finance Corporation. (3) "unnecessary" expenditures for purchase of diesel locomotives and maintenance of physical properties, and (4) the filing of an application with the I.C.C. for authority to offer preferred shareholders income debentures and common stock in exchange for preferred stock.

The management countered that it had the right of discretion in division of funds for rehabilitation or dividends. It also pointed out that its debt retirement and rehabilitation program was in accordance with a suggestion made by the I.C.C. in 1942, urging railroads having a heavy burden of debt to take advantage of favorable earnings to reduce their fixed charges, and stating that such a program was in the best interests of the stockholders. Favorable earnings and favorable progress in the rehabilitation program permitted the management to declare small dividends in December 1949, and again in March, June and September 1950. The 1949 dividend was distributed before the impounding action — taken by Judge Barnes to provide funds against which attorney's fees and other expenses might be charged if the suit was successful — but the subsequent dividends were affected.

The C.G.W.'s management appealed the three impounding orders in the Court of Appeals of the Seventh Circuit, asking that the lower court be directed to return the funds impounded from the March, June and September dividends. The court held that the impounding orders were erroneous and reversed them. With the entering of the reversal of the third impounding order, the Great Western will then distribute the entire $160,170 of impounded funds to holders of record on each of the three original dividend dates.

Attorneys associated with the case have stated that the impounding action taken by Judge Barnes was without precedent in a case of this kind.

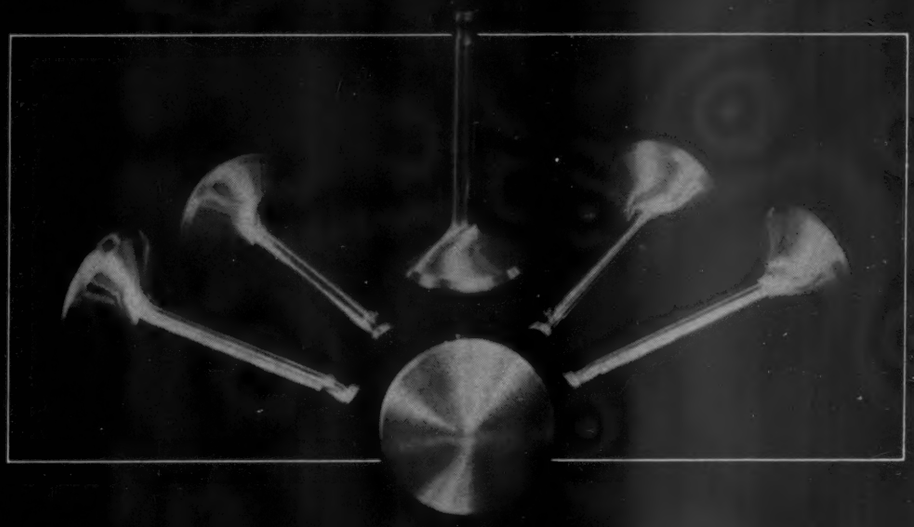
Maryland & Pennsylvania.—*Modification of Securities.*—The required number of security holders having given their assent, Division 4 of the I.C.C. has set March 1 as the effective date for modification of this road's securities under the so-called Mahaffie Act (section 20b of the Interstate Commerce Act). The commission order approving the modification plan was noted in *Railway Age* of January 8, page 64.

Missouri-Kansas-Texas. — *Adjustment Bonds.* — Directors of this road have authorized payment of one coupon on its adjustment mortgage bonds. The coupon will become due and payable April 1 and is No. 50, dated October 1, 1947.

Pennroad Corporation.—*Annual Report.*—Net income of this company, excluding net realized gains on investments, was $2,532,914 in 1950, an increase of $443,840 over the preceding year, according to the recently released annual report. In addition there was a net realized gain on sales of investments of $1,292,314, compared with $3,565,114 in 1949. On last December 31, net asset value of the firm was $66,470,960, or $13.29 a share, compared with $59,384,087, or $11.87 a share, on December 31, 1949.

Seaboard Air Line.—*Dividend.*—This road has declared a quarterly dividend of $1 a share on its common stock, payable March 27 to stockholders of record March 16. Two quarterly dividends of 50 cents each, two of 75 cents each, and an extra of 50 cents were paid on the common last year.

Union Pacific.—*Merger of Subsidiary.*—This road and its wholly owned subsidiary, the Saratoga & Encampment Valley, have applied to the I.C.C. for approval of a merger plan under which the latter road would become a branch of the U.P. and the separate company would be dissolved. The S.&E.V. is a 44-mi. line between Walcott, Wyo., and Encampment, its connection with the U.P. being at Wal-



When minimum specs hit tops . . .

RADIOGRAPHY helps meet them

Newest developments in piston aircraft engines put stern demands on exhaust valves. Specifications have climbed toward perfection. Even a tiny irregularity, chip, fold, or flaw cannot be tolerated.

So the manufacturer radiographs each valve. It is the one way to disclose internal conditions without destroying the part—the one way to release only products of highest quality.

Radiography has become a dependable means of gaining a reputation for constant top-quality work. It forestalls imperfect products—frequently suggests changes in operations that assure higher yields in production runs.

Ask your x-ray dealer to show you how radiography can increase your production and improve quality. Send for a free copy of "Radiography as a Foundry Tool."

EASTMAN KODAK COMPANY
X-ray Division
Rochester 4, N. Y.

Radiography . . .

another important function of photography

Kodak
TRADE-MARK

cott. The railroad owns no equipment.

The roads noted in their application that the I.C.C. once authorized abandonment of what is now the S.&E.V. line, but a committee of citizens in the area agreed to purchase it and donate it to the U.P. if the latter would continue service over the line. The U.P. agreed and in 1928 the S.&E.V. company was formed to perform the operations. The application noted that in the 1942-48 period deficits from operating the line averaged $45,000 a year. The roads said elimination of the separate company, and operation of the trackage as a branch line, will permit the U.P. to effect all possible economies.

New Securities

Application has been filed with the I.C.C. by:

GREAT NORTHERN.—To assume liability for $10,740,000 of equipment trust certificates to finance in part acquisition of equipment (listed below) which is expected to cost a total of approximately $13,447,500.

	Description and Builder	Estimated Unit Cost
27	1,500-hp. diesel-electric road-switching locomotives (Electro-Motive Division, General Motors Corporation)	$151,270
3	1,500-hp. diesel-electric road-switching locomotives (Electro-Motive)	160,270
7	1,200-hp. diesel-electric switching locomotives (Electro-Motive)	103,769
2	800-hp. diesel-electric switching locomotives (Electro-Motive)	94,400
1,000	50-ton, steel-frame, double-sheathed box cars (Great Northern shops)	5,900
100	70-ton covered hopper cars (American Car & Foundry Co.)	7,396
250	70-ton, high-side gondola cars (A.C.F.)	5,023

The certificates, to be dated April 1, would mature in 30 semiannual installments of $358,000 each, beginning October 1. They would be sold on the basis of competitive bids, and the interest rate would be fixed by such bids.

Division 4 of the I.C.C. has **authorized:**

CHICAGO & NORTH WESTERN.—To assume liability for $6,555,000 of equipment trust certificates, to finance in part 58 diesel-electric locomotives costing an estimated $8,197,000. (See *Railway Age* of February 19, page 55.) The certificates will be dated March 15, and will mature in 15 annual installments of $437,000 each, beginning March 15, 1952. Division 4 approved a selling price of 99.373 with interest at 2⅝ per cent—the bid of Halsey, Stuart & Co. and nine associates—which will make the average annual cost of the proceeds approximately 2.74 per cent. The certificates were reoffered to the public at prices yielding from 2 to 2.75 per cent, according to maturity.

PECOS VALLEY SOUTHERN.—To issue a secured installment note for $30,000, proceeds from which will be used to construct a warehouse in Pecos, Tex. The note will bear interest at 5½ per cent, and be payable in monthly installments over a 10-year period. The new building will be used partly as a freight station and part'y as a warehouse.

PENNSYLVANIA-CONNECTING.—The latter road to issue $12,728,000 of first mortgage series A bonds, and the P.R.R. to assume liability therefor. (See *Railway Age* of February 19, page 55). Proceeds will be used to call in the Connecting's present first mortgage bonds, which were due March 15. The new bonds will be dated as of March 1, and will mature March 1, 1976. Division 4 approved a selling price for the issue of 98.64 with interest at 3⅛ per cent—the bid of Union Securities Corporation and 14 associates—which will make the average annual cost of the proceeds approximately 3.2 per cent. The first mortgage bonds maturing March 15 will be extended after they are called in and thereafter will be held by the mortgage trustee. The new bonds were reoffered to the public at 99.569.

TOLEDO, ANGOLA & WESTERN.—To issue a promissory note for $130,000 to the Cleveland Trust Company in renewal of an existing note which has an unpaid balance of this amount. The new note will bear interest at 3 per cent, and will be payable in annual installments extending to January 1, 1956.

Security Price Averages

	Mar. 13	Last Week	Last Year
Average price of 20 representative railway stocks	55.20	57.00	42.22
Average price of 20 representative railway bonds	97.69	98.96	92.50

Dividends Declared

Chicago & Eastern Illinois.—Class A, 50¢, quarterly, payable April 16, July 16, October 15 and December 18, to holders of record April 2, July 2, October 1 and December 3.

Chicago, Milwaukee, St. Paul & Pacific.—common, $2, payable April 25 to holders of record March 30.

Norfolk Southern.—75¢, quarterly, payable June 15 to holders of record June 1.

Pennsylvania.—50¢, payable April 23 to holders of record March 26.

St. Louis Southwestern.—$5, payable March 23 to holders of record March 16.

Seaboard Air Line.—common (increased), $1, quarterly, payable March 27 to holders of record March 16; 5% non-cumulative preferred A, $1.25, quarterly, payable March 27, June 26, September 27, and December 27, to holders of record March 16, June 15, September 17 and December 14.

Southern.—Mobile & Ohio stock trust certificates, $2, semiannual, payable April 1 to holders of record March 15.

RAILWAY OFFICERS

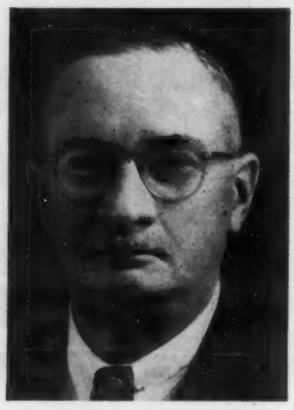
EXECUTIVE

John Pullen, general freight traffic manager of the CANADIAN NATIONAL SYSTEM has been appointed vice-president in charge of traffic, with headquarters as before at Montreal, Que., to succeed **Alistair Fraser,** who retired on March 15 under the retirement rules of the company. Mr.

Alistair Fraser

Pullen was born at Oak Park, Ill., on November 6, 1890, and was graduated, with honors in science, from McGill University in 1912. He joined the Grand Trunk (C.N.) in the summer of 1911 as a general clerk in the office of the operating vice-president and the following summer took over temporary duties as assistant agent at St. Anne de Bellevue, Que. After graduation from college Mr. Pullen became a clerk in the tariff bureau at Montreal and three years later was appointed soliciting freight agent at Montreal. He served as a lieutenant with the Black Watch in World War I. He was appointed chief clerk to the vice-president of traffic in August 1923, assistant to vice-president in charge of traffic on January 1, 1927, and regional general freight agent of the Central region at Montreal in September, 1932. In March 1939 Mr. Pullen was appointed freight traffic manager of the Central region at Montreal, becoming assistant general freight traffic manager at Montreal in October 1940, traffic manager of the foreign freight department in January 1942, and general freight traffic manager of the system at Montreal on March 7, 1947.

Mr. Fraser was born at New Glasgow, N. S., on March 15, 1886, and

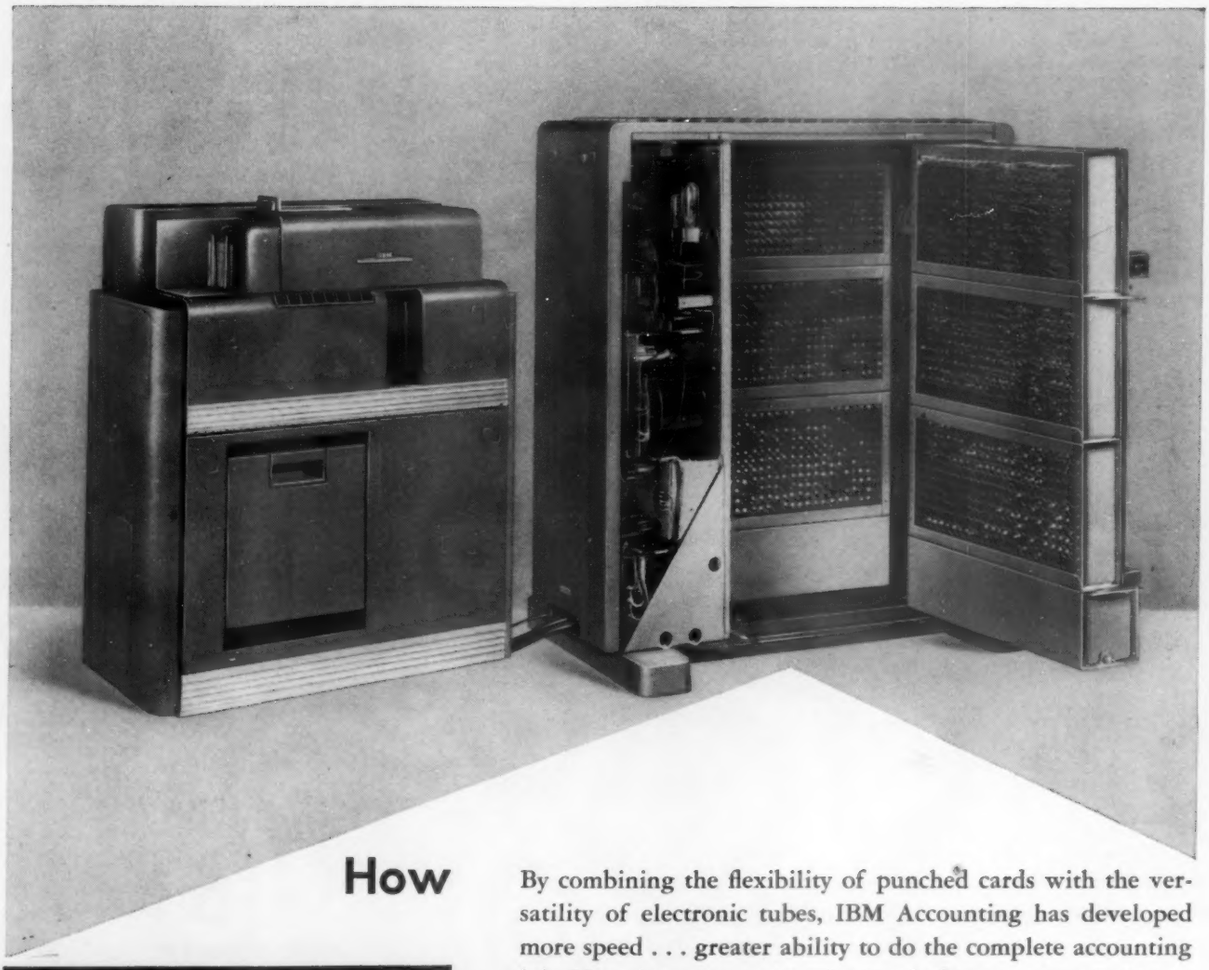


John Pullen

was educated at Dalhousie University (B.A. 1906) and Dalhousie Law School (LL.B. 1908; Hon. LL.D. 1948). He was admitted to the Bar of Nova Scotia in 1911 and made King's Counsel in 1921. Mr. Fraser practiced law in Canada until the outbreak of World War I, when he enlisted with the Canadian Expeditionary Forces, serving overseas as captain, company commander and adjutant. He won two promotions in the field and was awarded the Military Cross at Vimy Ridge. Upon demobilization in February 1919 he joined the C.N. as general solicitor, becoming commission counsel in 1923. In 1929 Mr. Fraser was appointed assistant general counsel and in October 1932 became vice-president in charge of traffic of the system.

O. B. Keister, Jr., who has been elected president of the TENNESSEE, ALABAMA & GEORGIA, with headquarters at Chattanooga, Tenn., as reported in the January 22 *Railway Age,* was born at Knoxville, Tenn., December 9, 1914. Mr. Keister received his B. S. degree in business administration from the University of Tennessee in 1936. He first entered railroad service in July 1936 as a student apprentice on the

(Continued on page 95)



How ELECTRONIC Accounting is Working for Business

By combining the flexibility of punched cards with the versatility of electronic tubes, IBM Accounting has developed more speed . . . greater ability to do the complete accounting job. Now it turns out regular work faster . . . prepares reports, records, and analyses never before available . . . quickly and economically.

Experience has shown thousands of businessmen that IBM Punched Card Accounting is the best way to process accounting data . . . to produce the day-to-day records that business requires. IBM's combination of electronic accounting machines and punched cards brings the advantages of both to every industry, whether it be banking, brokerage, distribution, insurance, meat packing, petroleum, railroad, or any other.

One of IBM's electronic machines is the Electronic Calculating Punch, pictured above. The continuous *practical* application of electronics to quantity-produced IBM machines is resulting in reduced costs to business . . . better service and better products.

IBM

TRADE MARK

INTERNATIONAL BUSINESS MACHINES CORPORATION

590 Madison Avenue, New York 22, N. Y.

B & O's Fast Freight "Sentinel Service"

WINS TONNAGE BACK TO THE RAILS

From Philadelphia, west to Willard, Ohio on the route to Chicago, the B & O's crack "Sentinel Service" trains are breaking records for fast and reliable service. Through accurate scheduling, customers receive siding-to-siding dependability, know the exact time the goods will be delivered.

Providing the speed for heavily-loaded "Sentinel Service" trains—and also for the "Time Saver," the LCL freight train that has cut schedules one-third—are Alco-GE diesel-electrics.

And they're serving a dual purpose, for many of them are equipped with steam generators to haul main line passenger trains.

The results are self-evident. The B & O has proved that competition can be overcome with dependable, efficient service. Their new fleet of Alco-GE "1600's" has power to move freight trains at express speeds, and can also be assigned to mainline passenger service. Here's real earning power at work!

Alco GE

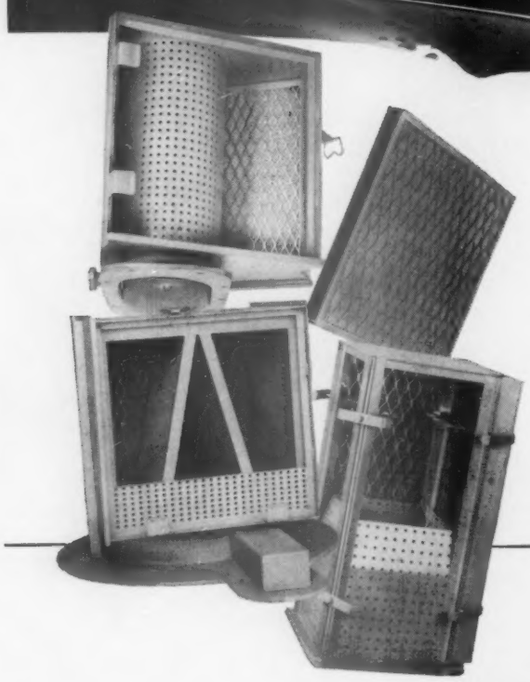
AMERICAN LOCOMOTIVE and GENERAL ELECTRIC

113-255

810
B&O

FAR-AIR* FILTERS

offer you absolute PRODUCT UNIFORMITY



You can be sure of top quality air filtering efficiency when you specify FAR-AIR Filters for your diesel locomotive and car ventilation applications. Precision engineering plus quality construction to rigid specifications assure *uniform* FAR-AIR Filter performance — larger dirt holding capacity, lower pressure loss, easier cleanability, reduced maintenance and replacement costs. That's why most of the railroads in America have standardized on FAR-AIR.

Farr Company engineers solicit your air filtration problems. Write today for complete information. Farr Company, 2615 Southwest Drive, Los Angeles 43, California.

A complete line of filter servicing equipment is available for any requirement, including 2 types of Far-Air automatic washers and oilers for volume operations.

*Trade Mark Reg.

herringbone- FAR-AIR FILTERS *-corrugations*

"Better by Farr"

FARR COMPANY *Manufacturing Engineers*

Los Angeles • Chicago • New York

Mf'd under license by Control Equipment Co., Ltd., Montreal, Canada.

(Continued from page 90)

Southern at Knoxville. A year later he was appointed assistant track supervisor at that point and subsequently was transferred to Columbia, S. C., where he served as assistant trainmaster until his promotion to trainmaster at Winston-Salem, N. C., in December 1938. He was appointed trainmaster at Richmond, Va., in February 1941, and the following November moved to Charlottesville, Va., as trainmaster. In

O. B. Keister, Jr.

April 1944 Mr. Keister became superintendent at Selma, Ala., and in June 1945 he was transferred to Hattiesburg, Miss., as superintendent of the New Orleans & Northeastern. He became superintendent of the Alabama Great Southern in January 1946, being appointed to a similar position for the Southern at Birmingham, Ala., in March 1946, at which point he was serving at the time of his election as president of the T.A.&G.

FINANCIAL, LEGAL & ACCOUNTING

Withers L. Durway, who has been advanced to secretary and treasurer of the FORT WORTH & DENVER CITY and

Withers L. Durway

the WICHITA VALLEY, with headquarters at Fort Worth, Tex., as announced in the February 12 *Railway Age*, was born in Fort Worth on June 18, 1899. Receiving his early education in the public schools of his native city, Mr. Durway subsequently attended Texas Christian University. He first entered the service of the Burlington Lines in October 1919 in the accounting department. He later served in various clerical posts, as head of several departments and as traveling auditor. He also held the position of statistician in the office of the vice-president and general manager, and in April 1946 became cashier. Two years later Mr. Durway was appointed paymaster, from which position he was promoted.

OPERATING

As reported in the *Railway Age* of January 29, **Louis E. King** has been appointed superintendent of the Charleston division of the SOUTHERN at Charleston, S. C. Mr. King was born on September 19, 1915, at Charlotte, N. C., and received his higher education at Virginia Military Institute. Entering the service of the Southern as a student apprentice in July 1937, he later served as assistant supervisor

Louis E. King

and as a track supervisor. After serving with the United States Army in World War II, Mr. King returned to the Southern as assistant trainmaster at Knoxville, Tenn. In March 1946 he was promoted to trainmaster at Asheville, N. C., and in September 1948 to assistant superintendent at Greenville, S. C. On January 1, 1950, he was appointed trainmaster at Alexandria, Va., where he remained until his recent promotion.

As reported in the *Railway Age* of February 12, **Walter H. Flowers** has been appointed superintendent of the ATLANTIC & DANVILLE at Lawrenceville, Va. Mr. Flowers was born at Semora, N. C., on May 30, 1895, and attended high school at Lawrenceville and the A.E.F. University at Beaume, France (Business Administration). He entered railroad service on June 12, 1912, with the Southern and served as clerk at Lawrenceville, South Hill, Emporia and Portsmouth, successively, except for service in the United States Army beginning April 2, 1917. He subsequently became assistant chief clerk to executive general agent, and later boatmaster at Norfolk, Va. He was appointed chief clerk to superintendent at Richmond, Va., on May 1, 1940; assistant agent at Alexandria, Va., on October 1, 1946; and assistant chief clerk to general manager at Charlotte, N. C., on March 1, 1947, all with the Southern. On June 1, 1949, Mr. Flowers was appointed assistant to president of the A. & D., in which capacity he served until his recent appointment.

G. M. Joyce, trainmaster of the SOUTHERN PACIFIC at Carlin, Nev., has been transferred to Ogden, Utah, in the same capacity, succeeding **D. W. Tanner,** who has been promoted to assistant superintendent at that point, as reported in the January 29 *Railway Age*. **M. H. Howard** succeeds Mr. Joyce.

Ray J. Burgess, track supervisor on the SOUTHERN at Laurel, Miss., has been promoted to trainmaster at Hattiesburg, succeeding **William C. Johnson,** who has been transferred to Oakdale, Tenn. Mr. Johnson succeeds **Thomas D. Moore, Jr.,** who becomes trainmaster at Danville, Ky.

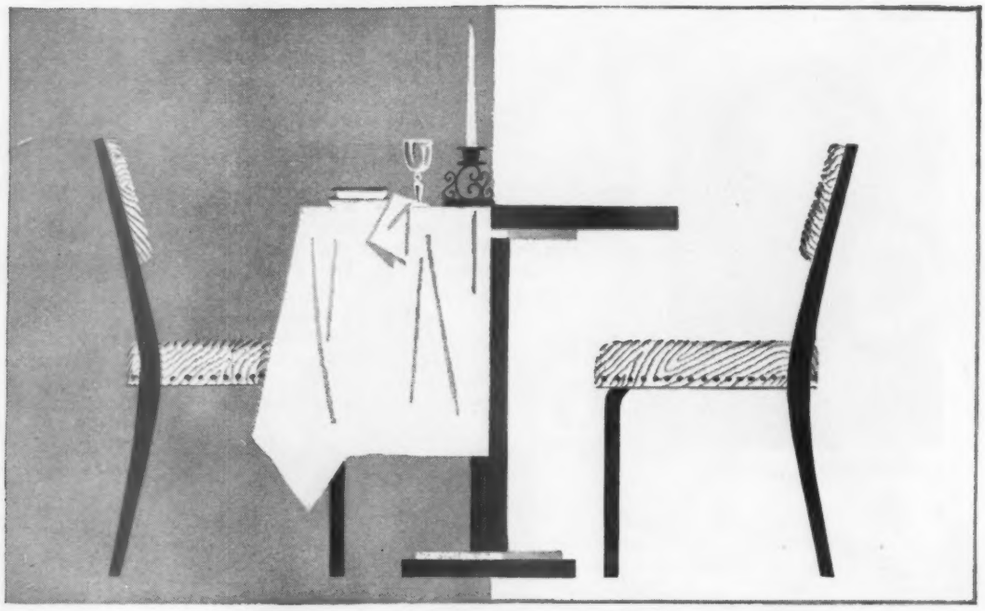
As reported in the January 29 *Railway Age*, **James F. Lynch** has been appointed superintendent of the WESTERN PACIFIC'S Eastern division, with headquarters at Elko, Nev. Mr. Lynch was born at Denver, Colo., on January 11, 1904, and began his railroad career with the Denver & Rio Grande

James F. Lynch

Western in 1920 as a clerk. In April 1924 he joined the W. P. as a brakeman, later being advanced through the positions of yardmaster, trainmaster and assistant superintendent. In November of last year he became acting superintendent at Elko, in which capacity he served until his recent appointment.

Howard Jones, whose promotion to superintendent of the St. Louis Terminal division of the MISSOURI PACIFIC, at St. Louis, Mo., was an-

For the
fastest train
on wheels



napery covers more than a bare table

In these times, you are shouldering added responsibilities! Travel is essential—public dining a necessity—and good napery indispensable to your efficient operation, extended service.

■ **Downs "upsets"**... napery prevents sliding glasses and dishes (even at 120 miles per)—cuts down resulting breakage and spilling.

■ **"Ups" passenger relations** . . . if there is an accident, napery absorbs spilled liquids, avoiding chance of soiled clothing, claims for damages.

■ **Puts cleanliness first** . . . uncovered tabletops (often unfinished) are unsanitary—cannot be properly cleaned with continuous traffic in a dining car.

You can take good napery for granted . . . because SIMTEX doesn't . . .
bringing you the finest in quality napery for over 50 years.

Simtex

SIMTEX MILLS, DIVISION OF SIMMONS COMPANY, 40 WORTH STREET, NEW YORK 13, N. Y.

nounced in the January 29 *Railway Age*, was born at Arkansas City, Kan., February 24, 1901. Mr. Jones attended grade and high school at Anthony, Kan., and Wichita, Kan., Business College. He started railroading with the M. P. in June 1918 as a laborer on a Wichita division extra gang. After spending the summer in track work he returned to his home in Anthony as a clerk in the local freight office. Later

Howard Jones

he held various clerical positions and also served as secretary to the division superintendent at Wichita. In November 1940 he was appointed trainmaster at Nevada, Mo., subsequently serving in similar posts at Monroe, Ark., Little Rock and Bush, Ill., until his appointment as assistant superintendent of the St. Louis Terminal division in January 1949. For several months early in 1950 Mr. Jones served as acting superintendent of the Illinois division, subsequently returning to his former post as assistant superintendent, which position he held prior to his promotion.

James L. Brown, general superintendent of transportation of the CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC, at Chicago, will retire on March 31. Mr. Brown was born in Chicago on March 29, 1886, and entered the service of the Milwaukee in 1901 as messenger boy for the general yardmaster. After holding various positions, in 1916 he was appointed assistant car accountant, being advanced to car accountant later in the same year. In 1917 he was made assistant superintendent transportation, Lines West, at Seattle, Wash., and in 1923 was advanced to superintendent of transportation, system, with headquarters at Chicago. Mr. Brown became general superintendent of transportation in 1926.

TRAFFIC

Clyde Edward Hill, who has been appointed assistant freight traffic manager of the MINNEAPOLIS & ST. LOUIS at Des Moines, Iowa, as announced in the January 29 *Railway Age*, was born in Rice county, Kan., on August 21, 1884. He was educated in the Lyons, Kan., public schools and at Topeka, Kan., Business School. Beginning his railroad career in March 1903, with the Atchison, Topeka & Santa Fe, Mr. Hill served that road at several points as agent's helper. From 1906 to 1907 he was employed on the Chicago, Rock Island & Pacific as telegraph operator, subsequently returning to the Santa Fe to serve as cashier at different stations in Kansas and New Mexico. He again joined the Rock Island in 1908, holding the positions of agent at various points, and of chief clerk-agent at Ottumwa, Iowa, until January 1910, when he entered the employ of the Iowa Central (now M. & St. L.) as relief agent. Three years later Mr. Hill again went with the Santa Fe as clerk in the general auditor's office, and in August 1915, rejoined the M. & St. L. After serving as agent at Hanna, Ill., Morning Sun, Iowa, Mason City, Albert Lea, Minn., and Ft. Dodge, Iowa, he was appointed general agent at Des Moines in 1934. In September 1945, he was advanced to assistant general freight agent, the post he held prior to his latest appointment.

Earl J. Hyett, who has been promoted to freight traffic manager of the CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC, with headquarters at Chicago, as announced in the February 5 *Railway Age*, was born at Neoga, Ill., November 30, 1889. Mr. Hyett received his education in public school's at Montrose, Ill., and at the Commercial Academy, St. Louis, Mo., beginning his railroad career in 1905 in the local freight office of the Vandalia (now Pennsylvania) at the latter point. He

Earl J. Hyett

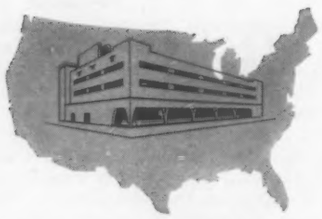
also served in the general freight office there until 1912, at which time he joined the Milwaukee as clerk at Seattle, Wash. In 1921 he was advanced to chief clerk at Chicago and in 1935 to assistant to traffic manager there. In 1941 Mr. Hyett became general freight agent at Chicago, being appointed assistant freight traffic manager in 1948, in which capacity he was serving at the time of his promotion.

As reported in the *Railway Age* of February 19, **T. F. Davidson** has been appointed general passenger agent of the SOUTHERN at New York. Mr. Davidson was born on July 1, 1911, at Statesville, N. C., and entered the service of the Southern on May 1, 1931, as chief clerk in the office of the district passenger agent at Philadelphia, Pa., subsequently transferring to Washington. On September 1, 1937, he was appointed secretary to the assistant passenger traffic manager and on July 1, 1938, was promoted to passenger representative at Memphis, Tenn. In September 1939 he was appointed city passenger agent at Atlanta, Ga., serving there subsequently as traveling passenger agent and as district passenger agent. Mr. Davidson was appointed district passenger agent at Miami, Fla., in July 1945, which position he held until his recent appointment.

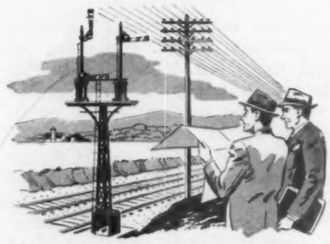
As reported in the February 5 *Railway Age*, **Raymond E. Hibbard** has been appointed general freight agent of the CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC at Chicago. Mr. Hibbard was born at Marquette, Iowa, July 6, 1899. He began his railroad career with the Milwaukee in September 1918 at Dubuque, Iowa, as ticket clerk, and following service as chief clerk to the district freight and passenger agent there, he moved to Chicago, where he held positions as clerk and chief clerk in the commerce department from 1922 to 1935. Subsequently he was made chief clerk to vice-president—traffic, and later served successively as office manager and assistant to vice-president—traffic until July 1948, when he became assistant general freight agent, the post he held prior to his new appointment.

S. G. Grace, whose retirement as freight traffic manager in charge of rates and divisions of the CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC, was announced in the February 5 *Railway Age*, was born on January 27, 1886, at Chicago, and received his higher education at the Armour Institute of Technology. He began his career with the Milwaukee in 1909 as a junior clerk, and subsequently served as tariff and rate clerk and chief clerk. He was promoted to assistant general freight agent in 1925 and to general freight agent in 1938. In 1941 Mr. Grace was further advanced to assistant freight traffic manager, becoming freight traffic manager in 1948.

As reported in the *Railway Age* of January 29, **Curtis Lenwood Dozier** has been appointed general passenger agent of the CHESAPEAKE & OHIO at Richmond, Va. Mr. Dozier was born at Los Angeles, Cal., on March 9, 1908, and attended grammar and high schools and Norfolk, Va., business college. He entered railroad service on August 1, 1927, with the C.&O. as stenographer-clerk at Norfolk, and was appointed ticket seller at Norfolk on April 4, 1929, and traveling pas-



1. A nation-wide warehouse system



2. Help from Railroad Specialists

3. Local Graybar Representatives

4. Catalog and quotation service

How Graybar speeds your procurement of electrical supplies

As an all-inclusive source of your electrical needs, Graybar can help you simplify procurement of telephone and telegraph equipment . . . pole-line supplies . . . indoor and outdoor lighting . . . . motors and power-supply items.

Scarcities of electrical items are bound to occur. Some will be local or temporary, others will be more serious—but, *on any order to Graybar,* you get full advantage of these "shortage beaters".

1. A nation-wide warehouse system that permits day-by-day check on the over-all supply picture, helps anticipate and forestall shortages before they occur.

2. The services of Graybar Railroad Specialists to work closely with you and, when necessary, to procure or to suggest substitutes for electrical items in short supply.

3. Near-by Graybar Representatives to provide up-to-the-minute forecasts of local delivery conditions and material availability.

4. Catalog and quotation service on the more than 100,000 electrical supplies distributed by Graybar.

Make it a point to plan ahead and avoid delivery delays—let Graybar be your electrical materials mobilizer. *Graybar Electric Co., Inc. Executive offices: Graybar Building, New York 17, N. Y.* 140-203

OFFICES AND WAREHOUSES IN OVER 100 PRINCIPAL CITIES

senger agent at Richmond on June 15, 1932. He became city passenger agent at Indianapolis, Ind., on March 16, 1933, transferring to Richmond on May 16, 1942. Mr. Dozier was appointed passenger service agent at Richmond on October 16, 1942; northwestern passenger agent at Chicago on January 1, 1946; general agent, passenger department, at Cincinnati, Ohio, on March 1, 1947; and assistant to passenger traffic manager at Richmond on January 16, 1948.

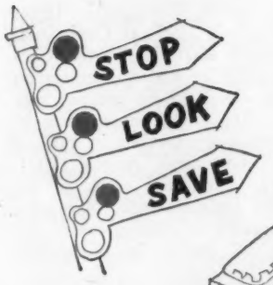
Thomas Clift, freight traffic agent of the UNION PACIFIC at Philadelphia, Pa., has been appointed general agent at that point.

As reported in the January 22 *Railway Age,* **George Arthur Leu** has been appointed traffic manager of the TOLEDO, PEORIA & WESTERN at St. Louis, Mo. Born at Chicago on June 15, 1904, Mr. Leu graduated from a four-year night course of the College of Advanced Traffic. He started his railroad career in September 1922 in the traffic department of the New York Central at Chicago, following four years with the Western Electric Company. After spending 10 years with the Central, he was employed for five years in the traffic department of the Ft. Smith & Western at Chicago. Subsequently he joined the traffic department of the New York, Ontario & Western at that point, remaining with that road for 10 years. Mr. Leu has served with the T. P. & W. for the past three years, and prior to his recent appointment was headquartered in the traffic department at Chicago.

W. F. McGowan, general freight agent of the SOUTHERN PACIFIC at Los Angeles, Cal., has been appointed assistant freight traffic manager, Central district, with headquarters at San Francisco. Succeeding Mr. McGowan is **V. L. Arenth,** foreign freight agent at San Francisco. **M. T. Austin,** assistant general freight agent at San Francisco, becomes Mr. Arenth's successor. Mr. Austin is succeeded in turn by **C. E. Ward,** assistant industrial agent. Mr. McGowan entered the service of the S.P. in 1920 as an office boy in the general freight office at Los Angeles. Subsequently he held various positions at that point before being appointed general freight agent in August 1948.

Mr. Arenth started with the S. P. in 1927 as a stenographer in the general freight department at San Francisco. After serving in various capacities in that department at San Francisco, Los Angeles and Long Beach, Cal., he became assistant foreign freight agent at San Francisco in 1946. A year later he was advanced to foreign freight agent.

As reported in the February 5 *Railway Age,* **Charles Vernon Sheriff,** chief clerk to the general freight agent of the NEW YORK CENTRAL'S Big Four district, has been promoted to general freight agent, with headquar-



How the Texas & Pacific made station modernization a sound investment

Sherman, Texas station was remodeled during the first year of the T & P's now four-year-old modernization program. Here both J-M Asbestos Roofing and J-M Asbestos Siding were used to transform the exterior as shown above.

Grand Saline, Texas station has a roof of J-M Asbestos Shingles . . . the same shingles that have survived 40 years service in many installations, and are still going strong. J-M Asbestos Siding Shingles were also used to provide a completely fireproof, maintenance-free exterior.

Gladewater, Texas station already had a durable roof of J-M Asbestos Shingles, applied over 10 years ago. J-M Asbestos Siding Shingles were installed to completely make over the exterior.

Denton, Texas station of the T & P, shown above, features murals depicting local industries, and city and school life. Note, too, the attractive, modern ceiling obtained through the use of J-M Insulating Board Ceiling Panels.

Two reasons why the Texas & Pacific considers its station modernization program a sound investment are the added good will of the public, and the stimulating effect on morale of local employees.

Still another reason is the use of Johns-Manville building products that will stand up for many years to come.

On station roofs, for example, the T & P uses J-M Asbestos Shingles. These fireproof and rotproof shingles stand up under constant exposure to sun, wind and rain—require little maintenance. Not one has ever burned or worn out. *On side walls,* J-M Asbestos Siding Shingles provide attractive, maintenance-free exteriors. *On ceilings,* J-M Insulating Board Ceiling Panels give a neat, modern appearance to station interiors. Easy to apply over existing ceilings, these panels have an attractive finish that does not require painting.

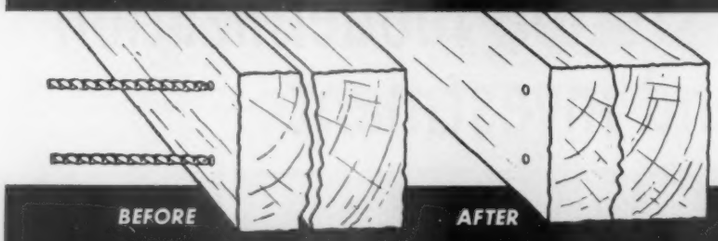
Perhaps you are considering a program to modernize *your* older stations. If so—why not make sure that it's a sound investment by using long-lasting, maintenance-free J-M building products. For details write: Johns-Manville, Box 290, New York 16, N. Y.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

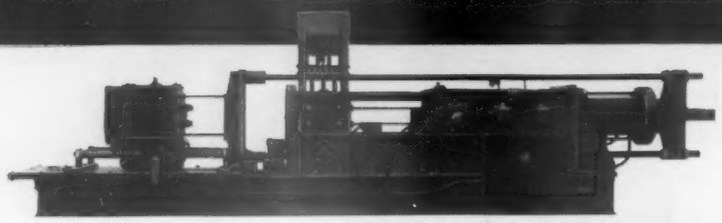
93 YEARS OF SERVICE TO TRANSPORTATION

DOWEL TIES *Quickly-Economically*



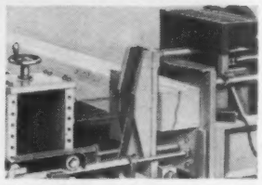
—WITH THE MODERN, AUTOMATIC **GRAHAM**

TIE DOWELLING MACHINE

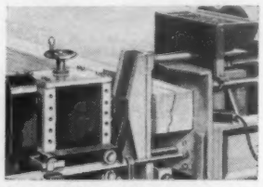


The modern Graham Tie Dowelling Machine—designed and perfected for fast, automatic installation of Giant Grip Dowels in railroad ties—provides great savings in time, money and effort in all tie dowelling operations. Furnished in Single or Double Units—the latter being set up in tandem for dowelling both ends of tie at the same time. Investigate this machine today, for speeding up dowelling operations on your road.

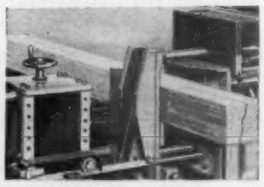
Write today for Bulletin DM-1



First Step—Ties are automatically fed into the machine, equalized for position and squeezed in the vise.



Second Step—Holes are automatically drilled slightly smaller than dowel size.



Third Step—Dowels are automatically screwed into tie by hydraulic pressure, completing operation. Tie is released and is then ejected by incoming tie.

GRAHAM TIE DOWEL SERVICE CO.

1201 HUNTINGTON BANK BUILDING • COLUMBUS, OHIO

ters remaining at Cincinnati, Ohio. Born on March 7, 1907, at Covington, Ky., Mr. Sheriff started with the Central in July 1923 as a stenographer on the Big Four. In 1929 he became rate clerk in the office of the general freight agent, subsequently serving in various clerical positions until August 1941, when he was appointed clerk in the office of the freight traffic manager. He was advanced to chief clerk to the general freight agent in September 1942.

Gordon E. Smith, freight traffic manager of the Central region of the CANADIAN NATIONAL at Toronto, Ont., has been appointed general freight traffic manager in charge of the sales division at Montreal, Que., succeeding **John Pullen,** who has been appointed vice-president in charge of traffic of the system. **W. Arnold Kember,** general freight agent at Boston, Mass., has been appointed assistant general freight traffic manager of sales at Montreal. A biography and photography of Mr. Smith were published in *Railway Age* of August 19, 1950, page 62.

Mr. Kember was born at Phillipston, Ont., on November 26, 1888, and joined the Central Vermont as a stenographer at St. Albans, Vt., in June 1908. He went to the Grand Trunk Pacific at Winnipeg, Man., in August 1911 and transferred to the rate division of the freight traffic department there in September 1913, becoming chief clerk in January 1916. In October 1920 Mr. Kember was appointed city freight agent at Port Arthur, Ont., and was promoted to chief clerk to general freight traffic manager at Montreal in December 1926, becoming assistant to the manager in August 1928. He was appointed general freight agent at Boston in October 1937 and served in that capacity until his present appointment.

P. B. Clark, traveling freight agent of the GRAND TRUNK WESTERN at Buffalo, N. Y., has been appointed general agent at Saginaw, Mich., succeeding **T. P. McCarthy,** who has been transferred to Flint, Mich., as announced in the January 8 *Railway Age*.

E. A. Krueger, commercial agent for the CHICAGO SOUTH SHORE & SOUTH BEND, at Chicago, has been appointed general agent at Milwaukee, Wis.

Reginald Pepping, rate clerk in the freight office of the CHICAGO, ROCK ISLAND & PACIFIC at Houston, Tex., has been appointed foreign freight agent at that point.

Walter H. Kramer, special movement clerk in the general passenger office of the CHICAGO, BURLINGTON & QUINCY at Chicago, has been appointed district passenger agent at Portland, Ore.

As reported in the March 12 *Railway Age*, **Arnold N. Anderson** has been advanced to assistant passenger

traffic manager of the CHICAGO GREAT WESTERN at Chicago. Born at Tracy, Minn., September 27, 1900, Mr. Anderson started railroading in his home town as a call boy on the Chicago & North Western in September 1916. After serving as car checker, baggageman and ticket clerk at that point, he was transferred to Rochester, Minn., as ticket seller in 1922 and to the Canal Street terminal, Chicago, in 1925. He returned to Rochester in 1926 to become city ticket agent for the Great Western. From 1927 to 1937 he served as city passenger agent at Marshalltown, Iowa, Des Moines and Rochester. Subsequently he was appointed traffic agent at Rochester, the post he held before his advancement to assistant passenger traffic manager.

MECHANICAL

Cecil D. Schwine, Jr., general foreman on the SOUTHERN at Chattanooga, Tenn., has been appointed assistant master mechanic at Birmingham, Ala.

As reported in the *Railway Age* of March 5, **H. S. McTeer** has been appointed superintendent of motive power and car equipment of the Quebec district of the CANADIAN NATIONAL at Quebec, Que. Mr. McTeer was born at Quebec, where he began his railway service at the C.N.'s St. Malo shops as a messenger in 1919. After his apprenticeship, he became a machinist and served in that capacity at Quebec, Joffre, Limoilou and Montreal. In 1940 he was appointed inspector at the company's shops at Toronto, Ont., and in the same year was appointed assistant foreman at London, Ont. In 1941 he moved to Hornepayne, Ont., as locomotive foreman, and two years later was transferred to Limoilou in the same capacity.

Lawrence J. Brasher, assistant master mechanic of the BELT OF CHICAGO, has been advanced to master mechanic, with headquarters at Clearing, Ill., succeeding **Jacob Uhrig,** who has retired after 38 years of service.

T. J. Sheridan, acting master mechanic, Chicago division, of the PENNSYLVANIA, has been appointed master mechanic on the same division.

E. Ross Hanna, master mechanic of the MISSOURI PACIFIC at Nevada, Mo., has retired after 26 years of service with the M.P. Lines.

J. W. Gann, master mechanic of the CHICAGO, ROCK ISLAND & PACIFIC at Armourdale yards, Kansas City, Kan., has been promoted to superintendent motive power, first mechanical district, with headquarters at Chicago.

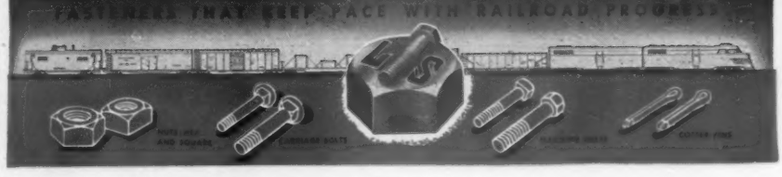
ON Cap Screws

Locomotive builders and railroad maintenance men know that modern "iron horses" are only as good as the fasteners that hold them together. That's why the "bolts" of yesterday have been replaced by modern, super-tough Lamson "1020" heat-treated Cap Screws. They're the fasteners that can handle the toughest holding jobs.

So remember this when you order Cap Screws. And remember, too, that Lamson "1020" heat-treated Cap Screws are the equal of original equipment *in every respect.* Lamson "1035", with 150,000 p.s.i. minimum tensile strength, offer you EXTRA holding power where required. They are the *ultimate* in high quality Cap Screws.

RAILROAD SALES DEPARTMENT
THE LAMSON & SESSIONS CO.
General Offices: 1971 West 85th St., Cleveland 2, Ohio
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

LAMSON & SESSIONS
FASTENERS THAT KEEP PACE WITH RAILROAD PROGRESS



INTERNATIONAL
HIGH GRADE TREATED
5 C I TIES
The International Dating Brand

Scientifically conditioned for long life in track, these A.R.E.A. Specification Ties are accurately cut and well-seasoned. International date-branded Ties are lowest in ultimate cost their quality safeguarded by an organization which has been serving the railroads for more than three-quarters of a century.

INTERNATIONAL CREOSOTING AND CONSTRUCTION CO.
Producers of Treated Ties, Poles, Piles, etc
GALVESTON-BEAUMONT
TEXARKANA

PURCHASES & STORES

Eugene K. Schrader, who has been appointed assistant general storekeeper of the ELGIN, JOLIET & EASTERN, at Joliet, Ill., as announced in the January 29 *Railway Age*, was born on September 6, 1903, at Buckingham, Ill., and was graduated from high school at Gary, Ind. Starting with the E. J. & E. in June 1920, Mr. Schrader held various clerical positions in the stores and mechanical department at Gary, and in 1938 became chief clerk at that point. From May to October 1944 he served as schedule clerk in the executive department at Chicago, subsequently returning to Gary as storekeeper. In March 1947 he was transferred to Joliet as storekeeper, the post he held until his recent appointment.

Henry M. Compton, whose promotion to assistant purchasing agent of the ST. LOUIS-SAN FRANCISCO, at St. Louis, Mo., was announced in the January 29 *Railway Age*, was born at Decatur, Ala., July 14, 1899, and was graduated from Columbia, Tenn., high school in May 1917. Subsequently he attended the University of Tennessee for one year, beginning his railroad career with the Frisco in February 1923 as secretary to the assistant to vice-president and chief purchasing officer at St. Louis. The following year he was made secretary to vice-president and chief purchasing officer. He became fuel clerk in November 1947 and chief clerk to general purchasing agent in April 1949. Mr. Compton held the latter post before his promotion.

Carl Berry Shearouse, whose appointment as purchasing agent of the ATLANTA & SAINT ANDREWS BAY, at Dothan, Ala., was announced in the February 12 *Railway Age*, was born at Guyton, Ga., March 21, 1909. In May 1926, following graduation from high school, Mr. Shearouse entered railroad service with the Central of Georgia as a mail clerk in the auditor of disbursements' office. Subsequently he was assigned to various clerical positions in the disbursements and division accountant's offices until September 1934, when he resigned to become a clerk in the auditor's office of the A.&St.A.B. Appointed traveling auditor in July 1939, Mr. Shearouse became assistant to the comptroller in July 1943, in which position he remained until his latest appointment.

ENGINEERING AND SIGNALING

H. E. Wilson, former district engineer, Eastern district, Eastern Lines, of the ATCHISON, TOPEKA & SANTA FE, with headquarters at Topeka, Kan., who has been on a leave of absence, has returned to that position.

T. F. Burris, division engineer of the CHESAPEAKE & OHIO at Grand Rapids, Mich., has been promoted to assistant chief engineer at Detroit. He is succeeded by **H. W. Kellogg,** division engineer at Saginaw, Mich., who is in turn replaced by **C. I. Hartsell,** division engineer at Detroit. Succeeding Mr. Hartsell is **Frank Manning,** resident engineer at Detroit.

W. A. Schubert, roadmaster on the ST. LOUIS-SAN FRANCISCO at Oklahoma City, Okla., has been advanced to division engineer of the River division, with headquarters at Chaffee, Mo.

W. H. Giles, engineer of design of the MISSOURI PACIFIC LINES, has been promoted to assistant chief engineer system—construction, with headquarters as before at St. Louis, Mo. He succeeds **Page P. Wagner,** who has been appointed director of research, as announced in the March 12 *Railway Age*.

As reported in the *Railway Age* of February 12, **William E. Manning** has been appointed chief engineer of the ATLANTIC & DANVILLE at Lawrenceville, Va. Mr. Manning was born on October 14, 1911, at Sutherlin, Va., and was graduated from Virginia Polytechnic Institute with a B.S. degree in engineering. He entered the service of the Southern as a rodman in the chief

William E. Manning

engineer's office at Charlotte, N. C., in November 1937. He was appointed student apprentice at Richmond, Va., in September 1938, later transferring to Danville, Va., Durham, N. C., and Salisbury, N. C. Mr. Manning became track supervisor at Camden, S. C., on July 1, 1940, subsequently transferring to Orangeburg, S. C., Blackville, S. C. and Salisbury, where he served until his recent appointment.

OBITUARY

Morton Mann, general agent of the UNION PACIFIC at Philadelphia, Pa., died on February 26.

Albert E. Davis, superintendent of safety of the CHICAGO, BURLINGTON & QUINCY, with headquarters at Chicago, died on March 8 at the Burlington (Iowa) Hospital, following a short illness, at the age of 63.

Current Publications

CHART

Business Booms & Depressions, 1951 Edition. Published by the Ex-Cell-O Corporation, 1200 Oakman blvd., Detroit 32, Mich. Also by United States Steel Supply Company, 208 S. LaSalle st., Chicago 4. Free.

The chart covers the period from 1796 to 1950, although not all data are available for that length of time. Data shown cover population, retail sales, income and savings, business activity, production, commodity prices and national defense.

FILMS

Speaking of Safety, a series of six training films arranged under the guidance of Dr. Irving J. Lee of the School of Speech, Northwestern University, and produced by the National Safety Council, 425 North Michigan ave., Chicago 11. Available only as 35-mm. sound-slide film with 16-in. 33 1/3-r.p.m. records. Single sets of six, with case and manual, $100, with varying quantity discount. Prices to non-members are double.

Aimed at training supervisors and foremen in the ways of conducting and addressing meetings. Explains the difference between "formal" and "working" speeches; "Butterflies in Your Stomach," and how to cure them; methods of preparing talks; what to do physically while talking; vocabulary and phrasing of ideas; how to get and hold an audience's attention, etc., all with a view to bringing greater effectiveness to safety meetings and programs.

Power to Stop. 16 mm., sound, color. 35 min. Released for showing to railroad clubs and car foremen's associations by American Steel Foundries, 400 North Michigan ave., Chicago 11.

This picture illustrates in striking manner the energy involved in stopping passenger trains from high speeds, and shows how effectively this is done by Simplex unit-cylinder clasp brakes under all operating conditions. Principal features of the film, including laboratory test equipment, road-test car and discussion of test results, are also summarized in a 16-page bulletin with the same title just issued by A.S.F.

BOOK

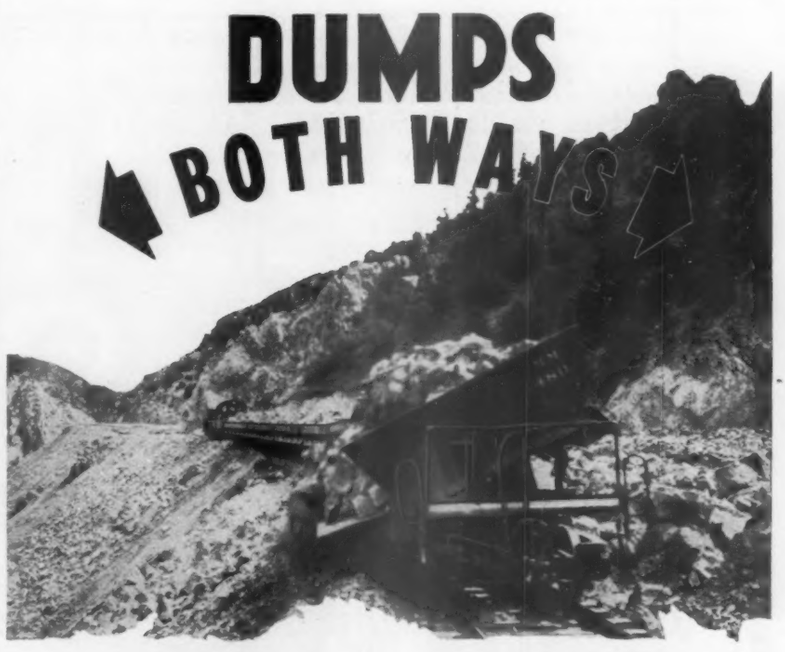
Commercial Motor Transportation, by Charles A. Taff. 413 pages. Published by Richard D. Irwin, Inc., 3201 S. Michigan ave., Chicago 16. $6.65.

Here is a broad treatment of the motor carrier industry which will give students of transportation and those engaged in the business a comprehensive picture of truck and bus operations. Part I outlines the scope of motor transportation and of the highway system, covering such topics as the role of highway transportation in national defense, the sources of highway revenue, methods of financing, and the extent of federal aid. Part II deals with the property-carrying aspects of motor transportation and covers in detail the various phases of trucking operations. Part III covers passenger-carrying operations. Problems, services and operational methods of both local and intercity property and passenger carriers are fully described. Particular emphasis has been placed upon intercity carriers, and an extended discussion of the operations of an intercity carrier of property has been included. Attention has been given to federal and state regulations to which various types of operation are subject.

PAMPHLET

Paying for Defense; A Statement on National Policy, by the Research & Policy Committee of the Committee for Economic Development. 46 pages. Published by the C.E.D., 444 Madison ave., New York 22. Free.

Discusses the nature of the economic problem, the size of the military program, how to stop inflation, the establishment of a policy to achieve a balance between total demand and total supply while military expenditures are rising, and taxation for a defense economy.



SAVES IN ALL DIRECTIONS

Experience of users of Differential cars indicates that the saving due to the automatic unloading of 400 to 500 car loads usually is sufficient to pay for the cars. For handling waste materials, ore, or for any of many other applications, Differential Air Dump cars can do a better job for you.

Send for Bulletin RA-3

Air Dump Cars • Car Dumpers • Locomotives • Larries
Mine Cars • Complete Haulage Systems • Mantrip Cars

DIFFERENTIAL STEEL CAR CO.
FINDLAY - OHIO

Since 1915 - Pioneers in Haulage Equipment

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JANUARY OF CALENDAR YEAR 1951

Name of road		Av. mileage operated during period	Operating revenues: Freight	Operating revenues: Passenger	Operating revenues: Total (inc. misc.)	Operating Expenses: Maintenance of: Way and structures	Operating Expenses: Maintenance of: Equipment	Operating Expenses: Traffic	Operating Expenses: Transportation	Operating Expenses: Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income: 1950	Net railway operating income: 1949
Akron, Canton & Youngstown	Jan.	171	449,347	133	466,319	60,308	41,768	33,759	136,349	301,761	64.7	164,558	76,116	78,483	48,901
Atchison, Topeka & Santa Fe System	Jan.	13,096	39,460,059	4,088,852	47,140,958	5,956,367	8,570,220	1,193,007	14,963,367	32,622,843	69.2	14,518,115	8,557,186	5,882,232	4,425,158
Atlanta & St. Andrews Bay	Jan.	82	320,028	2,173	328,419	31,490	20,175	7,058	63,454	136,064	41.4	192,355	108,016	53,748	52,725
Atlanta & West Point	Jan.	93	315,716	60,400	421,315	41,874	54,634	14,249	169,491	303,957	72.1	117,358	64,334	30,731	—163
Western of Alabama	Jan.	133	338,910	59,403	429,806	53,438	59,265	14,627	154,023	303,373	70.6	126,433	71,998	46,262	33,883
Atlantic & Danville	Jan.	205	159,295	.....	163,650	32,000	7,820	10,600	56,288	118,093	72.2	45,557	10,650	18,743	1,251
Atlantic Coast Line	Jan.	5,452	11,112,947	2,160,004	14,287,385	3,055,601	2,370,178	341,412	5,153,495	11,549,481	80.8	2,737,904	1,700,000	607,635	1,218,466
Charleston & Western Carolina	Jan.	343	471,747	9,356	492,990	110,931	64,664	16,715	150,515	353,052	71.6	139,938	70,000	71,670	48,611
Baltimore & Ohio	Jan.	6,188	31,496,766	2,035,762	35,435,047	3,938,498	7,822,074	786,284	14,795,729	28,836,337	81.4	6,598,710	2,674,115	3,109,518	929,827
Staten Island Rapid Transit	Jan.	29	253,889	48,963	307,087	48,452	38,099	1,354	147,634	265,216	86.4	41,871	35,900	—10,626	—38,889
Bangor & Aroostook	Jan.	602	873,104	38,122	950,813	166,789	146,005	14,091	274,026	657,662	69.2	293,151	134,080	128,507	196,340
Bessemer & Lake Erie	Jan.	212	1,382,436	1,098	1,406,747	188,247	607,852	17,915	422,055	1,319,389	93.8	87,357	302,985	99,314	53,918
Boston & Maine	Jan.	1,702	6,041,071	1,000,872	7,729,055	1,206,229	1,199,014	105,101	3,179,237	6,022,980	77.9	1,706,075	798,461	532,521	185,699
Cambria & Indiana	Jan.	35	155,211	.....	155,245	11,102	83,068	228	27,213	137,621	88.6	17,624	75,043	69,409	23,621
Canadian Pacific Lines in Maine	Jan.	234	705,118	48,558	785,458	99,727	81,769	7,143	259,826	461,948	58.8	323,510	28,142	210,442	134,292
Canadian Pacific Lines in Vermont	Jan.	90	206,477	10,617	234,025	44,811	23,786	5,764	110,247	192,325	82.2	41,700	11,813	—24,351	—55,656
Central of Georgia	Jan.	1,815	3,224,749	258,522	3,752,921	600,843	588,239	115,996	1,573,204	3,059,041	81.5	693,880	378,021	234,055	—50,461
Central of New Jersey	Jan.	410	3,024,909	474,248	3,742,871	526,014	663,559	53,553	1,901,128	3,314,697	88.1	428,174	392,278	—315,637	—366,922
Central of Pennsylvania	Jan.	210	1,647,400	8,699	1,695,817	186,048	433,608	26,202	541,002	1,232,508	73.7	463,309	67,642	695,241	579,465
Central of Vermont	Jan.	422	784,000	53,000	894,000	113,384	160,848	14,701	398,422	721,713	80.7	172,287	41,257	76,971	—1,133
Chesapeake & Ohio	Jan.	5,116	26,528,153	734,434	28,169,418	3,699,337	5,175,737	512,248	9,493,411	20,008,026	71.0	8,161,392	5,286,009	3,321,731	1,484,885
Chicago & Eastern Illinois	Jan.	886	2,329,992	287,195	2,880,008	337,756	404,407	107,796	1,051,181	2,046,757	71.1	833,251	341,500	363,986	132,073
Chicago & Illinois Midland	Jan.	130	912,929	194	933,071	104,580	159,654	34,821	239,220	576,126	61.7	356,945	183,677	156,584	14,875
Chicago & North Western	Jan.	7,923	13,127,463	1,781,170	16,716,149	2,126,192	2,988,112	298,571	7,756,106	13,933,731	83.4	2,782,418	1,395,367	977,968	—605,085
Chicago, Burlington & Quincy	Jan.	8,822	18,037,552	1,430,707	21,369,884	2,245,404	3,122,753	414,546	7,903,370	14,450,709	67.6	6,919,175	3,527,969	2,885,374	1,457,243
Chicago Great Western	Jan.	1,474	2,789,649	37,068	2,998,806	408,454	360,543	103,737	1,033,769	1,985,707	66.2	1,013,099	376,605	314,148	311,834
Chicago, Indianapolis & Louisville	Jan.	541	1,599,703	89,247	1,806,249	288,681	271,522	81,990	644,353	1,385,519	76.7	420,730	169,649	144,196	—45,267
Chicago, Milwaukee, St. Paul & Pacific	Jan.	10,671	18,092,461	1,497,288	21,689,607	2,407,106	4,056,170	411,360	9,463,852	17,331,227	79.9	4,358,380	2,264,000	1,479,918	—1,083,057
Chicago, Rock Island & Pacific	Jan.	7,925	14,134,947	1,889,088	17,494,912	1,626,499	2,455,013	465,556	6,552,654	11,913,951	68.1	5,580,961	2,548,391	2,211,661	735,808
Chicago, St. Paul, Minn. & Omaha	Jan.	1,617	2,396,584	197,576	2,792,516	314,648	424,333	58,465	1,557,304	2,479,757	88.8	312,759	183,564	—18,474	—187,138
Clinchfield	Jan.	317	2,101,120	1,421	2,113,455	255,884	316,825	36,782	415,692	1,058,071	50.1	1,055,384	188,850	1,014,421	506,509
Colorado & Southern	Jan.	739	1,043,080	87,723	1,233,954	122,044	175,867	28,272	490,633	871,923	70.7	362,031	195,610	118,215	50,767
Ft. Worth & Denver City	Jan.	804	1,370,049	171,523	1,703,125	240,506	237,008	52,040	650,858	1,283,192	75.3	419,933	148,049	160,512	283,839
Colorado & Wyoming	Jan.	41	166,964	.....	287,007	18,688	22,836	1,248	102,881	156,971	54.6	130,036	86,016	43,584	22,847
Columbus & Greenville	Jan.	168	190,837	25	198,104	40,502	31,368	2,851	52,645	145,262	73.3	52,842	27,415	30,218	8,402
Delaware & Hudson	Jan.	793	4,955,735	178,870	5,252,882	500,146	997,300	74,037	1,896,032	3,659,763	69.7	1,593,119	896,052	757,760	438,532
Delaware, Lackawanna & Western	Jan.	966	5,893,345	872,752	7,338,576	701,946	1,298,863	157,332	3,328,993	5,758,807	78.5	1,579,769	829,004	714,480	301,295
Denver & Rio Grande Western	Jan.	2,387	5,728,384	310,423	6,269,374	542,311	1,269,424	180,746	2,183,631	4,463,978	71.2	1,805,396	945,204	887,654	379,152
Detroit & Mackinac	Jan.	232	162,123	423	170,256	40,000	20,142	2,883	37,403	108,582	63.5	61,674	37,055	22,308	22,034
Detroit & Toledo Shore Line	Jan.	50	733,210	.....	736,787	71,669	49,082	13,090	212,255	358,921	48.7	377,866	175,263	90,591	97,494
Detroit, Toledo & Ironton	Jan.	464	1,759,289	389	1,832,779	165,032	222,971	26,558	441,880	913,460	49.8	919,319	482,900	367,193	330,107
Duluth, Missabe & Iron Range	Jan.	564	667,332	1,939	711,549	572,003	689,017	8,582	696,333	2,047,352	287.7	—1,335,803	118,496	—1,460,557	—1,543,032
Duluth, South Shore & Atlantic	Jan.	539	557,865	9,046	591,458	91,130	110,660	20,721	267,853	507,516	85.8	83,942	25,725	42,962	—73,426
Duluth, Winnipeg & Pacific	Jan.	175	420,000	800	426,200	47,238	59,058	4,389	186,890	304,158	71.4	122,042	32,021	32,053	—57,649
Elgin, Joliet & Eastern	Jan.	238	3,677,619	.....	4,588,578	352,523	607,341	33,007	1,610,701	2,751,480	60.0	1,837,098	886,542	418,686	666,278
Erie	Jan.	2,245	13,225,760	674,009	14,840,772	1,504,401	2,146,106	353,728	6,075,737	10,749,920	72.4	4,090,852	1,948,588	1,715,101	962,920
Florida East Coast	Jan.	571	1,889,824	816,494	2,966,852	412,296	457,764	65,775	1,016,651	2,125,547	71.6	841,305	238,717	465,621	417,507
Georgia Railroad	Jan.	326	735,208	52,546	835,249	108,655	125,093	28,494	319,464	617,501	73.9	217,748	35,517	190,520	44,886
Georgia & Florida	Jan.	359	310,387	11	316,085	86,812	31,732	17,757	85,057	233,520	73.9	82,565	16,274	42,293	—21,432
Grand Trunk Western	Jan.	974	4,359,000	230,000	4,929,000	533,366	919,368	67,575	2,131,056	3,807,845	77.3	1,121,155	266,230	638,753	253,851
Canadian Nat'l Lines in New Eng.	Jan.	172	195,000	7,000	272,000	54,171	59,960	2,697	146,416	280,387	103.1	— 8,387	22,746	—65,955	—149,497
Great Northern	Jan.	8,316	13,519,801	978,608	15,560,527	2,769,741	3,397,933	358,903	6,632,136	13,852,889	89.0	1,707,638	1,491,897	191,943	—3,491,887
Green Bay & Western	Jan.	224	351,925	.....	358,272	73,881	46,789	21,378	81,891	239,036	66.7	119,236	56,382	58,751	38,723
Gulf, Mobile & Ohio	Jan.	2,898	6,166,959	495,047	7,144,357	1,049,208	1,399,414	275,824	2,329,929	5,463,416	76.5	1,680,941	732,230	603,655	386,072
Illinois Terminal	Jan.	462	810,308	82,267	1,003,103	135,838	148,731	36,509	391,711	765,625	76.33	237,478	118,864	96,614	17,139
Illinois Central	Jan.	6,539	20,596,067	1,953,678	24,847,237	3,575,420	4,334,247	516,264	9,435,468	18,896,443	76.1	5,950,794	3,252,444	2,304,824	1,982,408
Kansas City Southern	Jan.	891	3,361,826	144,382	3,811,293	334,556	379,281	78,171	1,102,239	2,005,835	52.6	1,805,458	870,000	695,250	788,180
Kansas, Oklahoma & Gulf	Jan.	327	549,908	604	556,442	36,259	40,656	18,687	112,959	229,608	41.3	326,834	150,653	139,905	95,151
Lake Superior & Ishpeming	Jan.	156	58,051	22	62,104	38,368	52,323	2,141	50,309	152,006	244.8	—89,902	26,742	—106,584	—99,864
Lehigh & Hudson River	Jan.	96	271,272	.....	273,056	39,158	26,992	10,077	76,374	163,752	60.0	109,304	48,276	41,760	883
Lehigh & New England	Jan.	191	689,903	.....	696,571	59,467	111,701	11,040	200,511	423,561	60.8	273,010	141,194	147,097	57,761
Lehigh Valley	Jan.	1,229	5,987,036	353,458	6,616,808	726,237	1,545,391	136,470	2,598,926	5,261,835	79.5	1,354,973	634,285	637,211	123,382
Long Island	Jan.	365	1,227,374	2,562,294	4,023,744	580,972	779,811	11,588	2,270,044	3,771,085	93.7	252,659	477,798	—485,643	—625,453
Louisiana & Arkansas	Jan.	756	1,900,800	77,100	2,049,247	342,625	244,608	64,207	569,827	1,290,235	63.0	759,012	356,083	248,687	346,706

Table continued on next left-hand page.

Highly-stressed structural joints hold tighter when bolted, latest tests prove!

You can save substantially by substituting high-strength bolts for rivets in maintenance and erection of railroad bridges, as well as other structures subject to high stress.

As a result of recent tests under the auspices of the Research Council of Riveted and Bolted Structural Joints, E. J. Ruble, Structural Engineer, research staff, A.A.R., made a number of field applications, using high-strength bolts in railway structures. From his findings, he estimates savings of $160,000 a year if high-strength bolts were used in railroad bridge repair alone . . . or a grand total of $440,000 a year saved if all field connections were bolted. The tests *prove* that high-strength bolts stay tight longer than rivets in joints subjected to the same vibrational loading.

Ideally suited for highly-stressed structural joints are RB&W quenched and tempered steel bolts . . . heat-treated to assure the best combination of tensile strength, toughness and ductility to meet heavy load conditions.

Address RB&W at Port Chester for a report on "The Effect of Various Fasteners on the Fatigue Strength of a Structural Joint."

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Dallas, Oakland. Sales agents at: Portland, Seattle

RB&W
THE COMPLETE QUALITY LINE

106 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

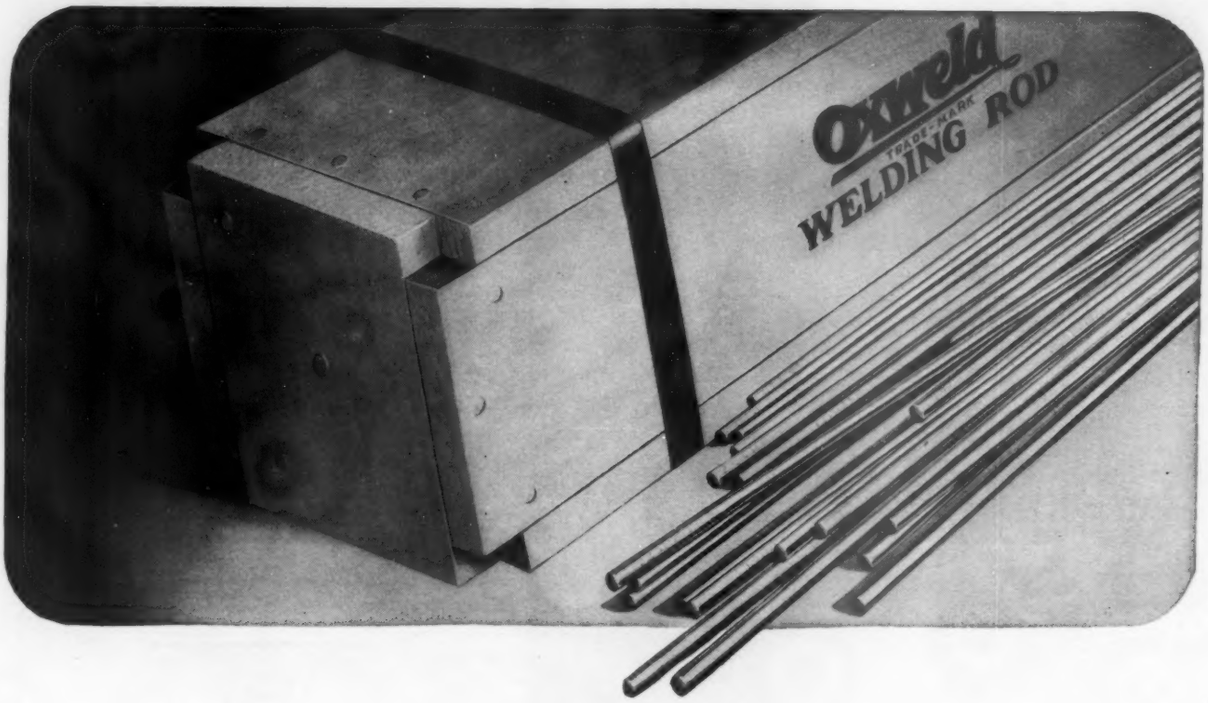
REVENUES AND EXPENSES OF RAILWAYS

MONTH OF JANUARY OF CALENDAR YEAR 1951

Name of road		Av. mileage operated during period	Operating revenues			Operating Expenses					Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income	
			Freight	Passenger	Total (inc. misc.)	Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total				1950	1949
Louisville & Nashville	Jan.	4,778	17,147,646	1,372,810	19,721,767	2,356,392	3,485,412	299,207	7,278,099	14,071,285	71.3	5,650,482	3,722,798	2,619,900	989,913
Maine Central	Jan.	981	2,069,053	113,590	2,312,323	370,271	368,980	19,846	741,722	1,568,425	67.8	743,898	386,256	307,144	210,940
Midland Valley	Jan.	334	194,607	10	197,338	36,029	12,434	4,595	55,312	115,906	58.7	81,432	18,147	51,774	42,370
Minneapolis & St. Louis	Jan.	1,406	1,833,479	21,045	1,915,383	275,641	258,435	117,430	621,310	1,387,268	72.4	528,115	271,103	214,306	29,047
Minneapolis, St. Paul & S. S. Marie	Jan.	3,224	2,515,173	74,734	2,743,612	474,134	636,375	70,760	1,279,806	2,575,650	93.9	167,962	210,434	—763	—510,046
Mississippi Central	Jan.	148	216,241	—112	220,873	39,455	29,535	13,030	60,020	151,308	68.5	69,565	24,888	29,060	14,150
Missouri-Illinois	Jan.	172	428,757	177	437,783	60,355	68,341	8,171	101,708	247,061	56.4	190,722	122,991	74,473	69,923
Missouri-Kansas-Texas Lines	Jan.	3,243	5,795,496	770,180	7,221,564	849,038	932,365	232,732	2,661,963	5,016 314	69.5	2,205,250	1,130,099	775,528	469,220
Missouri Pacific	Jan.	6,960	17,621,546	1,171,527	20,550,476	3,126,823	3,632,999	436,539	7,393,249	15,241,133	74.2	5,309,343	2,349,073	2,416,860	1,413,474
Gulf Coast Lines	Jan.	1,727	3,869,986	148,738	4,233,480	749,877	558,974	81,373	1,307,197	2,842,031	67.1	1,391,449	602,804	460,026	672,977
International-Great Northern	Jan.	1,089	2,616,995	363,101	3,258,934	666,831	500,037	51,493	1,221,440	2,587,883	79.4	671,051	236,904	281,486	398,541
Monongahela	Jan.	178	764,667	—2	769,377	82,080	86,411	997	259,981	434,531	56.5	334,846	64,507	118,897	—122,246
Montour	Jan.	51	228,860	.....	229,427	5,233	87,616	693	93,622	197,662	86.2	31,765	42,147	43,781	30,036
Nashville, Chatt. & St. Louis	Jan.	1,049	2,686,417	190,057	3,169,667	407,033	442,160	116,206	1,155,309	2,231,866	70.4	937,801	494,691	454,166	353,449
New York Central	Jan.	10,729	51,258,577	10,936,914	69,054,052	9,115,770	14,214,199	1,009,096	32,125,660	59,565,5t 7	86.3	9,488,485	5,050,003	2,382,406	—85,639
Pittsburgh & Lake Erie	Jan.	221	3,889,137	99,641	4,177,634	503,935	1,152,781	76,398	1,475,456	3,419,600	81.9	758,034	808,748	687,619	556,971
New York, Chicago & St. Louis	Jan.	2,192	13,546,486	193,429	14,121,675	1,537,563	2,030,331	299,644	5,163,055	9,482,437	67.1	4,639,238	2,284,710	1,797,266	1,291,326
New York, New Haven & Hartford	Jan.	1,794	7,824,944	4,338,689	13,488,071	1,657,458	2,057,496	168,694	5,656,332	10,220,012	75.8	3,268,059	1,285,000	1,101,980	1,022,449
New York Connecting	Jan.	21	258,046	.....	270,187	68,899	19,188	.....	59,677	150,211	55.6	119,976	66,419	80,841	75,247
New York, Ontario & Western	Jan.	542	615,642	139	646,717	81,786	82,448	24,353	288,489	507,419	78.5	139,298	36,302	32,969	—124,244
New York, Susquehanna & Western	Jan.	120	399,265	43,722	460,906	50,254	47,055	6,849	187,013	314,018	68.1	146,888	31,664	75,305	66,034
Norfolk & Western	Jan.	2,135	15,197,696	449,667	16,273,476	2,068,057	3,368,012	251,830	4,937,267	11 233,299	69.0	5,040,177	3,902,946	2,271,729	1,485,056
Norfolk Southern	Jan.	643	870,028	.....	899,606	156,402	109,170	44,234	306,449	686,155	76.3	213,451	117,141	52,918	63,179
Northern Pacific	Jan.	6,887	10,393,516	619,488	11,947,061	1,700,420	2,625,108	260,937	5,100,741	10,346,136	86.6	1,600,925	1,180,253	965,671	—2,143,579
Northwestern Pacific	Jan.	331	772,056	5,291	798,584	209,777	98,468	3,221	367,545	695,959	87.1	102,625	49,524	—2,565	—119,589
Oklahoma City-Ada-Atoka	Jan.	132	93,716	.....	94,724	19,032	2,459	1,932	21,773	48,451	51.1	46,273	19,351	12,252	5,435
Pennsylvania	Jan.	10,127	62,504,725	14,116,225	83,936,158	9,095,822	21,195,820	1,237,522	37,183,236	71,924,085	85.7	12,012,073	5,468,793	4,862,821	4,912,592
Pennsylvania-Reading Seashore Lines	Jan.	373	613,796	112,451	764,315	201,425	87,456	9,644	537,297	872,789	114.2	—108,474	94,266	—331,741	—651,473
Pittsburg & Shawmut	Jan.	97	240,774	.....	241,677	19,932	53,173	3,759	62,522	146,897	60.8	94,780	30,355	59,961	42,562
Pittsburgh & West Virginia	Jan.	132	760,459	.....	781,519	144,908	162,627	50,380	216,452	603,349	77.2	178,170	104,369	124,739	92,495
Reading	Jan.	1,317	9,684,558	599,957	10,956,443	1,310,340	2,101,018	136,840	4,458,079	8,331,367	76.0	2,625,076	1,435,159	1,210,662	630,183
Richmond, Fredericksburg & Potomac	Jan.	118	1,406,524	651,286	2,299,433	218,488	261,776	19,420	738,575	1,374,357	59.8	925,076	483,868	354,200	201,639
Rutland	Jan.	407	395,200	29,426	499,038	78,244	80,815	14,329	262,201	456,942	91.6	42,096	32,117	—9,468	—67,354
Sacramento Northern	Jan.	271	259,387	.....	265,867	52,029	18,551	2,349	79,423	161,353	60.7	104,514	13,065	70,575	—17,989
St. Louis-San Francisco	Jan.	4,635	8,865,197	680,998	10,273,017	1,621,353	1,778,872	253,707	3,808,228	7,921,452	77.1	2,351,565	1,353,317	1,126,433	574,786
St. Louis, San Francisco & Texas	Jan.	159	301,785	5,531	330,867	44,175	31,343	16,108	135,260	238,433	72.1	92,434	25,905	19,350	—16,282
St. Louis Southwestern Lines	Jan.	1,569	5,909,686	68,561	6,181,585	562,822	643,707	149,132	1,719,114	3,254,197	52.6	2,927,388	1,865,358	836,481	687,899
Seaboard Air Line	Jan.	4,146	11,062,854	1,573,056	13,551,886	2,150,728	2,153,162	331,762	4,480,108	9,655,957	71.3	3,895,929	1,861,483	1,624,339	1,076,791
Southern	Jan.	6,344	18,774,259	1,466,404	21,773,022	2,975,645	3,900,840	376,165	7,743,674	15,837,573	72.7	5,935,449	2,973,228	2,304,204	1,921,509
Alabama Great Southern	Jan.	316	1,334,199	110,376	1,573,642	226,593	378,544	32,085	559,552	1,255,871	79.8	317,771	211,400	146,330	140,286
Cinn., New Orleans & Texas Pacific	Jan.	336	3,006,184	270,177	3,454,602	435,458	756,117	60,289	941,711	2,315,660	67.0	1,138,942	707,158	520,867	507,439
Georgia Southern & Florida	Jan.	397	578,395	103,512	742,417	158,741	63,857	7,426	213,681	472,735	63.7	269,682	94,385	67,043	64,999
New Orleans & Northeastern	Jan.	203	977,371	58,218	1,090,807	161,082	108,212	18,689	256,519	585,674	53.7	505,133	297,306	165,840	111,674
Southern Pacific	Jan.	8,129	35,518,912	3,847,017	41,684,267	4,569,021	7,910,459	714,524	15,316,495	30,513,504	73.2	11,170,763	5,986,926	4,131,265	173,128
Texas & New Orleans	Jan.	4,316	10,560,006	954,846	12,272,280	1,927,030	1,616,585	228,120	4,414,420	8,712,631	71.0	3,559,649	1,639,443	1,266,647	1,103,614
Spokane International	Jan.	152	159,865	1,040	173,421	57,437	18,006	4,999	51,363	141,031	81.3	32,390	11,268	11,695	—46,552
Spokane, Portland & Seattle	Jan.	931	2,022,350	86,764	2,240,573	329,779	241,165	27,717	713,717	1,397,675	62.4	842,898	176,117	600,109	—62,400
Tennessee Central	Jan.	286	412,221	18,102	455,436	85,708	68,223	9,783	146,852	330,798	72.6	124,638	27,579	55,897	59,879
Texas & Northern	Jan.	8	106,307	.....	118,632	11,447	8,106	1,312	28,540	53,323	44.9	65,309	19,175	33,241	10,683
Texas & Pacific	Jan.	1,846	5,409,286	503,008	6,414,484	820,541	962,086	168,911	2,201,254	4,485,267	69.9	1,929,217	852,497	698,558	618,386
Texas Mexican	Jan.	162	254,120	.....	282,456	63,330	25,479	6,363	70,594	183,493	65.0	98,963	39,818	39,528	58,633
Toledo, Peoria & Western	Jan.	239	548,147	.....	554,230	61,779	31,103	43,494	130,390	297,223	53.6	257,007	132,306	73,756	82,800
Union Pacific	Jan.	9,720	33,769,931	2,862,742	39,215,940	3,952,574	7,673,764	929,313	13,897,642	28,538,606	72.8	10,677,343	6,909,212	2,637,092	601,685
Utah	Jan.	110	134,963	.....	135,627	14,919	54,016	766	66,321	143,283	105.6	—7,656	11,367	—13,781	—21,776
Virginian	Jan.	643	3,587,939	2,294	3,689,733	370,881	742,174	41,620	806,171	2,057,660	55.8	1,632,073	1,102,000	759,377	482,047
Wabash	Jan.	2,393	8,554,688	499,693	9,740,423	1,059,940	1,251,637	274,658	3,941,537	6,895,896	70.8	2,844,527	1,254,066	1,032,790	434,519
Ann Arbor	Jan.	294	730,819	.....	737,035	79,673	101,546	24,125	330,644	553,516	75.1	183,519	88,053	64,727	99,875
Western Maryland	Jan.	837	4,141,671	8,627	4,319,044	509,418	785,898	76,021	1,345,555	2,883,718	66.8	1,435,326	842,000	804,703	373,325
Western Pacific	Jan.	1,193	4,214,109	214,997	4,517,314	484,075	603,763	197,693	1,295,582	2,791,420	61.8	1,725,894	800,087	840,615	295,539
Wisconsin Central	Jan.	1,051	2,280,808	35,874	2,440,143	269,165	516,198	63,093	1,105,636	2,047,578	83.9	392,565	213,122	26,825	14,719

*The following data on the Long Island for December and the 1950 twelve months totals were not available when the tabulations were prepared for the February 26 issue of *Railway Age*.

Long Island	Dec.	365	1,066,455	2,471,519	3,936,573	207,053	642,313	6,662	3,585,026	4,578,970	116.3	—642,397	330,916	—1,245,780	—217,758
	12 mos.	365	13,738,482	33,028,575	49,316,227	6,447,692	8,717,186	190,581	25,989,394	42,872,220	86.9	6,444,007	5,276,415	—2,150,223	—3,025,911



How "OXWELD" Rods Reduce Welding Costs

Trade-Mark

You use less rod per weld, because OXWELD Rods produce high-strength welds with minimum reinforcement. OXWELD No. 1 H. T. Rod, for example, has a tensile strength 11,000 lb. per sq. in. higher than any ordinary steel rod—enough *extra strength* to permit reduction of the amount of weld metal on a job, with substantial saving of gases and labor.

You weld easier and faster—saving both time and gases—because all formulas for OXWELD Rods are worked out to give highest weldability as well as best possible physical properties in finished welds.

You get better welds at lower finishing costs, because welds made with OXWELD Rods are always of uniform high quality, strength, and ductility—easy to machine and finish without excessive labor.

You need fewer types of rods to handle your complete range of welding. Six OXWELD Rods—No. 1 H. T. Steel, MW Steel, No. 7 Drawn Iron, No. 25M Bronze, No. 23 Aluminum, and No. 9 Cast Iron—are sufficient for all average fusion welding, braze-welding, and bronze-surfacing. For the less frequent jobs of specialized nature, there are 9 additional welding rods and 8 hard-facing rods—all available from the same source.

The term "Oxweld" is a registered trade-mark of Union Carbide and Carbon Corporation.

OXWELD RAILROAD SERVICE COMPANY
A Division of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

RED-DEVIL CAR-SHAKER

FOR COAL, SAND
ETC.
SAVES LABOR.

OVER 100 IN
SUCCESSFUL OPERATION.

LOWEST PRICE
AVAILABLE ON A
CAR SHAKER.

ROSS AND WHITE CO.
DAILY NEWS BLDG.
CHICAGO.

HYMAN-MICHAELS COMPANY

Relaying Rails ★★★ **Dismantling**

Used railroad equipment—cars—locomotives
Freight Car Replacement Parts
Complete stocks of guaranteed used freight car parts carried on hand by us at all times. Located conveniently for shipment to any part of the country. Write—Phone—Car or Track Dismantling, or Car Parts.

Main Office
122 SOUTH MICHIGAN AVENUE
CHICAGO, ILLINOIS

Branches
Wire—when interested in used Rails, Equipment, Cars,

St. Louis	Los Angeles	Havana, Cuba
New York	San Francisco	Houston

SERVICE QUALITY RELIABILITY

LOOKING FOR A JOB?

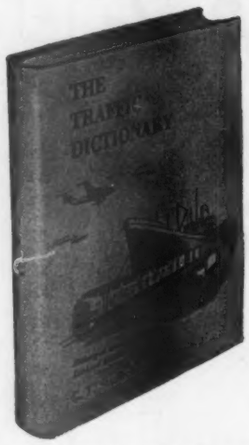
Use the "POSITION WANTED" column of the Classified Department to your advantage.

Write To:

GET TOGETHER DEPT., RAILWAY AGE
30 Church St. • New York 7, N. Y.

New Fourth Edition

THE TRAFFIC DICTIONARY



By GEORGE T. STUFFLEBEAM
Manager, Transportation Research, Remington-Rand

Enlarged and brought up to date this handbook contains 4,000 terms, phrases, code marks and abbreviations used in all branches of transportation. Terms used in warehousing, shipping documents, claim procedure and practice before the I.C.C. are included. Not only traffic managers but anyone concerned with shipping or traffic department work needs a copy of this standard reference.

320 pages, 4½ x 6, $3.75

SENT ON TEN DAYS' APPROVAL

Simmons-Boardman Publishing Corporation
30 Church Street, New York 7, N. Y.

Please send me a copy of the new edition of Stufflebeam's TRAFFIC DICTIONARY, on Ten Days' Approval. If satisfactory I will remit the list price of $3.75; otherwise I will return the book.

Name .....

Address .....

City ..... Zone..... State.....

(This offer is limited to retail customers in the United States) R.A. 3-19-51

RAILROAD EQUIPMENT—*FOR SALE*

STANDARD GAUGE FREIGHT CARS

Box, Single Sheathed, 40 & 50-Ton
Flats, 50 and 70-Ton
Gondolas, Composite, 50 & 70-Ton
Gondolas, Composite, 50-Ton, Low Side, Drop End
Hoppers, Covered, All-Steel, 50 & 70-Ton
Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Hoppers, Triple, All-Steel, 70-Ton, Cross Dump
Ore Hopper, All-Steel, 50-Ton, Center Dump
Stock, 40-Ton, Single Deck
Tank, 10,000-Gallon, Class III
Tank, 8,000-Gallon, Class II

Flats, Extra Long, 40 and 50-Ton, 70' to 74'

STANDARD GAUGE DUMP CARS

End Dump, 10-Yd., 30-Ton, Lift Door
End Dump, 20-Yd., 50-Ton, Drop Door
Side Dump, 16-Yd., 40-Ton, Lift Door
Side Dump, 20-Yd., 40-Ton, Lift Door
Side Dump, 30-Yd., 50-Ton, Lift Door

STANDARD GAUGE LOCOMOTIVES

45-Ton, General Electric Diesel-Electric, 300 H.P., 2 Traction Motors
Gasoline—10-Ton to 25-Ton
Diesel-Mechanical—8-Ton to 30-Ton
Gasoline-Electric—35-Ton
Propane-Electric—70-Ton
One 50-Ton, H. K. Porter, Type 0-4-0, oil-fired, Steam, Built 1942

PASSENGER EQUIPMENT

All types of Passenger & Baggage Equipment, including Self-Propelled!

4 ALL-STEEL DINING CARS, AIR-CONDITIONED

Send us your inquiries
We Buy Freight Cars for Dismantling
Send us your offerings

REPAIR PARTS
For
All Types of
Freight Cars

IRON & STEEL PRODUCTS, INC.

GENERAL OFFICE
13486 S. Brainard Ave., Chicago 33, Illinois
Phone: BAyport 1-3456

NEW YORK OFFICE
50-c Church St., New York 7, N. Y.
Phone: BEekman 3-8230

"ANYTHING containing IRON or STEEL"

STORAGE TANKS
6,000 Gallon
8,000 Gallon
10,000 Gallon

Educational Services
for
RAILROAD MEN

Our New Service
on
Diesel Locomotive
Operation
is highly recommended
for
Engineers and Firemen

The Railway
Educational Bureau
Omaha 2, Nebraska

FOR SALE

Used 75 Ton Baldwin Steam Locomotive, Class 8-34-D-550 with tender. Price and information on request.

DALTON SUPPLY CO.
2829 Cedar St. Phila. 34, Pa.
GArfie'd 6-1800

SHORT LINE RAILROAD
WANTED

Interested in purchase or lease — industrial trackage; short line (serving several towns); remainder of an interurban system.
Address Box 576, RAILWAY AGE, 30 Church St., New York 7, N. Y.

Retired Operating Officer available specialized service. Actual experience before Presidential Emergency Board. Complete railroad study and Company Arbitrator. Address Box 573, RAILWAY AGE, 30 Church St., New York 7, N. Y.

GREENHART

Piles, Poles, Gang Sawn Lumber Fire Resistant, Teredo and termite resistant. Treatmentt unnecessary. Double strength.
GREENHEART & WALLABA TIMBER CO., INC.
52 Vanderbilt Ave.,
New York 17, N. Y.
Instalaltion & Design—Information on Request

KEEP
BUYING
BONDS

WANTED

GOOD USED DIESEL ELECTRICAL OR MECHANICAL STANDARD GAUGE

LOCOMOTIVES

45-Ton, 65-Ton, 70-Ton, 80-Ton, 100-Ton

Address Box 581
RAILWAY AGE
30 Church St.,
New York 7, N .Y.

Advertisers

IN THIS ISSUE

A

Aeroquip Corporation 14
Allied Chemical & Dye Corporation, General Chemical Division 79
Allied Chemical & Dye Corporation, The Barrett Division 25
American Bridge Company 37
American Hair & Felt Company 32
American Hoist & Derrick Co. 19
American Locomotive Company .. 92, 93
American Steel Foundries 21
Armco Steel Corporation 82

B

Barco Mfg. Co. 22
Bethlehem Steel Company 3
Budd Company, The 80, 81
Byers Company, A. M. ....Front Cover

C

Caterpillar 85
Classified Department 109
Columbia Steel Company 12, 13
Combustion Engineering-Superheater Inc. 77

D

Dalton Supply Co. 109
Differential Steel Car Co. 103
Douglas Fir Plywood Association ... 34

E

Eastman Kodak Company 89
Edison Incorporated, Thomas A. 35
Electro-Motive Division, General Motors Corporation 28, 29

F

Farr Company 94

G

General Electric Company 92, 93
General Railway Signal Company ..... Back Cover
Gould-National Batteries, Inc. 16
Graham Tie Dowell Service Co. 100
Graybar Electric Company, Inc. 98
Great Lakes Steel Corporation 24
Greenhart & Wallaba Timber Co., Inc. 109

H

Hyman-Michaels Company 108

I

International Business Machines Corporation 91
International Creosoting & Construction Co. 102
International Steel Co. 23
Iron & Steel Products, Inc. 109

J

Johns-Manville 99

K

Koppers Company, Inc. 20

L

Lamson & Sessions Co., The 101

M

Master Lubricants Company 11

N

National Aluminate Corporation 2
National Lock Washer Company, The 33
National Steel Corporation 24

O

Okonite Company, The 38
Oxweld Railroad Service Division, Union Carbide and Carbon Corporation 107

P

Permacrete Products Corporation ... 27

R

Railway Educational Bureau, The .. 109
Reading Company 87
Ross & White Co. 108
Russell, Burdsall & Ward Bolt and Nut Company 105
Ryerson & Son, Inc., Joseph T. 110

S

Safety Car Heating and Lighting Company, Inc., The 111
Scullin Steel Co. 18
Simmons-Boardman Publishing Company 36, 108
Simmons Company, Simtex Mills Division 96
Speno Railroad Ballast Cleaning Co., Inc., Frank 26
Standard Car Truck Company 8, 9
Superheater, Inc.-Combustion Engineering 77

T

Tennessee Coal, Iron & Railroad Company 12, 13

U

Union Asbestos & Rubber Company 31
Union Carbide and Carbon Corporation, Oxweld Railroad Service Division 107
Union Switch & Signal Company .. 6
United States Steel Company 12, 13
United States Steel Export Company 12, 13, 37

V

Vapor Heating Corporation 17
Van Der Horst Corporation of America 10

W

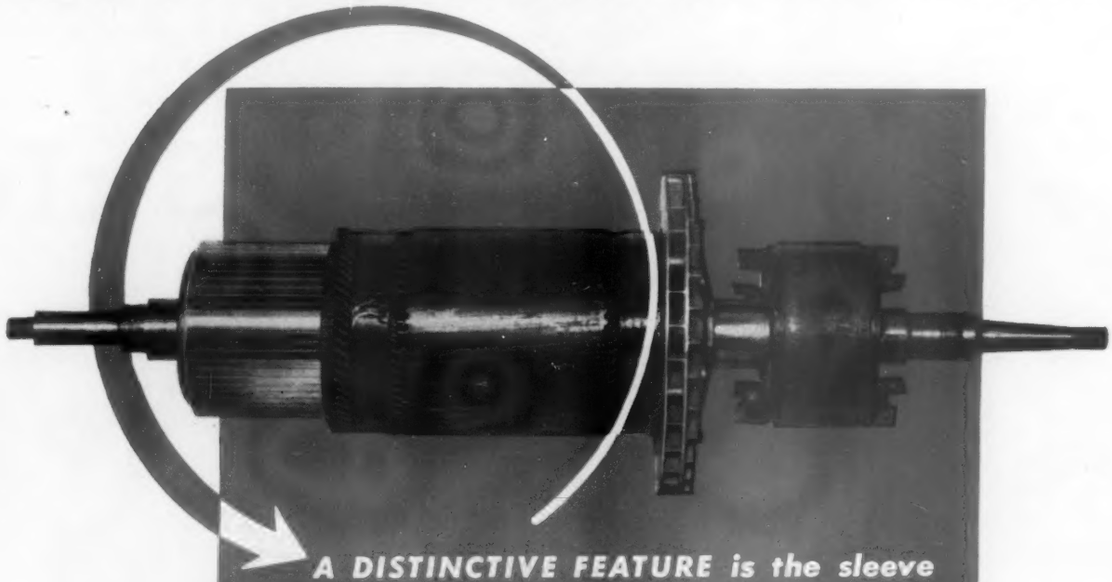
Waugh Equipment Company 30
Western Railroad Supply Company .. 15
Westinghouse Air Brake Co. 4

STEEL *in stock at* **RYERSON**

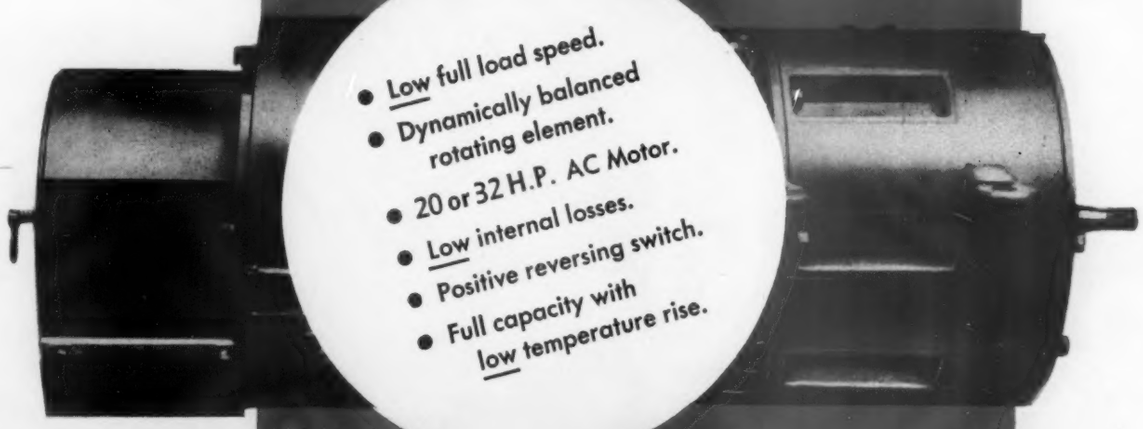
Thousands of kinds, shapes and sizes of steel are ready for quick shipment from Ryerson to any shop along your line. Call Joseph T. Ryerson & Son, Inc. Plants: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City, Pittsburgh, Los Angeles, San Francisco.

BARS—carbon & alloy, hot rolled & cold finished
STRUCTURALS—channels, angles, beams, etc.
PLATES—sheared & U. M., Inland 4-Way Floor Plate
SHEETS—hot & cold rolled, many types and coatings
TUBING—boiler & mechanical, seamless & welded
STAINLESS—Allegheny plates, sheets, bars, tubes

Safety 20, 25 and 30 KW Genemotors are built for LONG LIFE WITH MINIMUM OPERATING COST



***A DISTINCTIVE FEATURE** is the sleeve mounted armature readily removable from the shaft as a separate unit . . . resulting in practical, low operating cost.*



- Low full load speed.
- Dynamically balanced rotating element.
- 20 or 32 H.P. AC Motor.
- Low internal losses.
- Positive reversing switch.
- Full capacity with low temperature rise.

THE SAFETY CAR HEATING AND LIGHTING COMPANY INC.

NEW YORK · CHICAGO · PHILADELPHIA · ST. LOUIS · SAN FRANCISCO · NEW HAVEN · MONTREAL

SAFETY COMPANY PRODUCTS INCLUDE: Complete Air-conditioning Equipment • Genemotors • Generators • Fans Regulators • Lighting Fixtures • Switchboards • Parcel Racks • Generator Drives • Motor Alternators

MISSOURI PACIFIC LINES

cuts 19 sidings to 9

. . . with G·R·S cTc

MIDDLEBROOK

POPLAR BLUFF

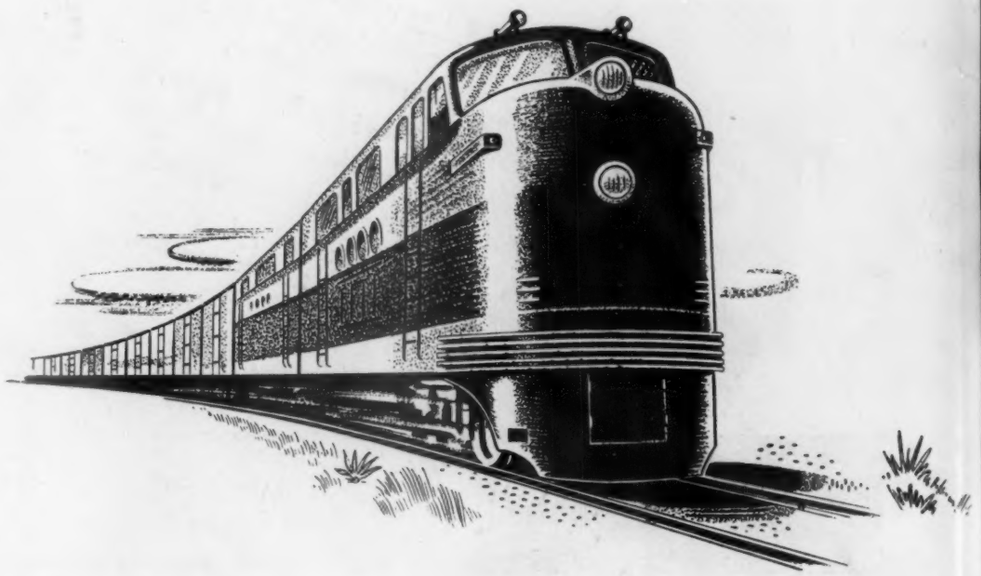
= SIDING REMOVED

On 82 miles of single track converted to G-R-S Centralized Traffic Control the Missouri Pacific improved train operation and increased track capacity.*

Passenger trains save time. Delays are minimized if any trains are behind schedule.

More freight trains may now be operated, without interfering with passenger trains.

Let us study your sidings for a possible reduction in number. Call your G-R-S district office.



**Railway Age, December 9, 1950*

GENERAL RAILWAY SIGNAL COMPANY

New York 17 Chicago 3 ROCHESTER 2, N.Y. St. Louis 1 A-2497